THE BUILDER

Incorporating ARCHITECTURE & THE BRITISH ARCHITECT

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NEWS SUMMARY

AN EXAMPLE OF SPEEDY BUILDING in Germany is described in a letter from a correspondent p. 298

CONSTRUCTION OF THE WORLD'S longest single-span bridge across the Narrows linking Brooklyn with Staten Island, is urged in a report on New York's traffic problems. p. 299

THE TERMINAL BUILDING of the 82-miles long Haweswater Aqueduct, completed at a cost of £14m., is illustrated. p. 300

UNESCO have issued a booklet (through HMSO) for the benefit of the non-scientific reader on "Nuclear Energy and its Uses in Peace" which gives an indication of the vast implications for the future of the new world of controlled nuclear fission. p. 302

THE ASSOCIATION OF MUNICIPAL CORPORATIONS is taking steps to check officials who change their posts too frequently by asking member Councils to limit new appointments to officials who have been more than six months with their employing authority. p. 312

THE BOARD OF TRADE have published the section of the Census of Production dealing with the Building Materials Trade. p. 312

EXPERIMENTS IN THE CONSTRUCTION of low-cost houses in precast concrete have been carried out in Malaya by the newly-established Federal Housing Trust. p. 319

RESEARCH INTO FUEL ECONOMY IN SCHOOLS conducted by the BRS has shown that the relative order of economy in the three systems studied were forced warm air, radiators and floor panels, respectively. p. 321

THE LONDON COUNTY COUNCIL have issued their annual guide to evening classes for the session 1955-56. p. 323

GREEN BELTS

SOME months ago Mr. Duncan Sandys, the Minister of Housing and Local Government, made an important statement urging local planning authorities to consider the creation of green belts in order to prevent the further unrestricted sprawl of the great cities. There will be general agreement with the Minister's view that the tendency to urban sprawl must be checked both "for the well-being of our people and for the preservation of the countryside." The need to prevent the creep of suburbia has been accepted since the war almost without dissent as one of the major aims of planning policy. There is, perhaps, not the same degree of support for the concept of green belts. There are those in town planning circles who think that the objects of a green belt would equally well be served by the creation of green wedges extending from the countryside into the heart of the great conurbations, and that a certain amount of lineal development into the countryside should be permitted. The creation of green wedges running into the big cities would be very desirable, but it must necessarily be a long-term policy. In any event, we doubt if it should be regarded as a substitute for the designation of green belts which seems the logical method of checking urban sprawl and of preserving the countryside.

So far, however, the only green belt to be formally designated is that for the Greater London area. The development plans for the Home Counties provide for a green belt, some seven to ten miles deep, all around the built-up area of Greater London. The Minister has said that, apart from some limited rounding-off of existing small towns and villages, no further urban expansion will be allowed within this belt, and it is clear from the decisions in recent planning appeals that the Ministry is now strictly enforcing this policy.

In other parts of the country, some local planning authorities are endeavouring by administrative action to restrict further building development around the large urban areas. The Minister in his statement earlier this year said that he was asking local planning authorities to go further than this and to consider the submission of proposals for the creation of clearly defined green belts.

The Minister has now issued a circular (fully set out in our issue of August 12) to all local authorities drawing attention to the Minister's statement, and recommending planning authorities to consider establishing a green belt wherever this is desirable in order (a) to check the further growth of a large built up area; (b) to prevent neighbouring towns from merging into one another; or (c) to preserve the special character of a town.

The circular recommends that wherever practicable the belt should be several miles wide so as to ensure an appreciable rural zone all round the built up area concerned. Authorities wishing to establish a green belt are asked to submit to the Minister a sketch plan indicating the approximate boundaries of the proposed belt. In due

course, a detailed survey should be made to define the inner and outer boundaries of the belt as well as the boundaries of the towns and villages within it; thereafter these particulars will be incorporated as amendments in the development plan—this will be presumably the stage for objections and representations by the public.

It is unfortunate that the circular does not give clearer guidance on the many matters which will arise in connection with the designation of a green belt. The purposes of a green belt are described in negative terms, there being no attempt to put forward the positive advantages of a green belt as affording a rural zone to which the city dweller has access for recreation and enjoyment of the countryside. Apart from a reference to sports grounds, there is no indication in the circular of the types of recreational activity which would be regarded as appropriate in a green belt. Is a green belt to be maintained on National Park lines with agriculture and rural life predominant? If so, ought local authorities to be encouraged to establish sports grounds in the green belt? Ought they not perhaps to be encouraged, as far as possible, to site them within the city boundaries? A belt consisting of mile after mile of sports grounds would hardly afford that rural setting which ought surely to be the primary feature of a green belt.

Again, the circular contains no very clear guidance on the important question of the size of a green belt. The statement that it should be " several miles wide " is neither helpful nor in many cases realistic. Ideally, the size of the green belt should bear some relation to the size of the urban area it surrounds, though there may be cases where a narrower belt would suffice, either because there are already substantial wedges of countryside running into the town or because of the presence of some natural feature such as a range of hills. But, of course, in many cases the ideal size cannot be achieved. In the case of the great conurbations, the object must presumably be to preserve such wedges of countryside as still exist and to establish the green belt around the whole area. None of these problems is even mentioned in the circular.

An even greater disappointment, however, is the complete absence of any guidance as to where to site development which is forbidden in the green belt; this problem is likely to be most acute in the case of low density housing. Whilst it is imperative to check the uncontrolled outward sprawl of cities, it must be remembered that much of the tendency to sprawl is created by the popular desire to own a small house and garden. This demand shows no sign of abating. Indeed with full employment and high wages, it will probably increase; there are signs of the demand spreading from the black-coated to the industrial workers. A realistic planning policy must take account of this demand; if it is not met in some way, then it will probably be difficult to maintain the green belts. Mr. Sandys, who has already shown his enthusiasm for the dispersal of population and industry under the Town Development Act, may be hoping that the demand for low-density housing can be met by the new and expanded towns. This is undoubtedly the best solution, but the policy of dispersal to new and expanded towns will have to be pursued on a far larger scale and far more rapidly, if the demand for houses on the fringes of our cities is to be appreciably checked. Some people in their search for a house may be willing to go beyond the green belt and to make a longer daily journey to work, particularly as rail services improve. The result of establishing a green belt may therefore create a demand for houses in the countryside beyond the belt. It would seem desirable that local planning authorities should reserve suitable areas beyond the green belt for low-density housing. In this connection, it is perhaps a little unfortunate that the MHLG circular invites planning authorities to submit sketch plans with only a vague indication of the inner and outer boundaries; it is to be hoped that the interval between the submission of the sketch plan and the more detailed proposals for incorporation in the development plan will be as short as possible.

GUESSING THE WEIGHT OF THE CAKE

THE RIBA, as noted in our last issue, has now set up an *ad hoc* committee to implement the resolution passed at the annual general meeting on May 3: that the Council should reconsider their decisions concerning the representation of members and students in salaried employment as set out in the Council's letter of January 4, and instructing the Council to bring forward fresh and definite proposals in line with the majority opinion of those who replied to the questionnaire sent out in the spring of 1954. The new committee is representative of four main categories: Principals in private practice; official architects; assistants in private practice; and assistants in Government service. So far as is possible, all shades of architects in practice are represented.

Terms of reference have now been extended to consider the advisability of an extended investigation into the structure of the profession, its total income in relation to the scale of salaries that might be afforded, and the grading of architectural appointments.

It may be asked where all this is going to lead the members of the RIBA. The aim of the committee—perhaps influenced by a summer which has encouraged garden fêtes—is apparently to estimate the weight of the architectural cake, and this is to be established, it must be assumed, by the issue of another questionnaire. If the sought-for result is to be achieved, such questionnaire must require information personal to architects' practices or departments which many undoubtedly will feel unable to give. Even if a sufficiency of worthwhile returns are received, what step then presents itself? Only, we imagine, the preparation of a suggested scale of remuneration for the enforcement of which there is no sanction. So the wheel will again return full circle to the point of departure: Can and ought the RIBA to take powers to constitute itself a Trade Union, whether affiliated to the TUC or not?

The Council have already given a clear answer to this, and we think they are right in saying that it is not for a learned society to allow its members to be involved in machinery which might involve the strike weapon. There is, nevertheless, a case for rethinking policy along the lines of offering definite encouragement to the establishment of an all-party organisation, which could include members of other architectural institutions and associations, formed to implement the wishes of those of the RIBA members who replied affirmatively to the questionnaire and whose views were so vociferously advanced at the annual general meeting.

To return to the *ad hoc* committee, it may be felt that a wiser and less cumbrous method of establishing fair rates for salaried architects could be found than that now proposed. More realistic, perhaps, than guessing the weight of the architectural cake would be to set out to lay down a scale of suggested remuneration for salaried members based on comparative scales applying to other professions such as law, accountancy, medicine, etc., which involve comparable periods of study and tests of qualification. One danger of cutting a hypothetical cake into attractively sized pieces is that the slices may prove to be too large for the public to swallow, and that the latter may turn to those who offer services to do with building in which the architect has no share. But we certainly think that there is a case for consideration of salaries paid to senior assistants of experience whose pay often compares badly with that of their principals and, particularly, of new entrants.

Notes of the Week

THE PAVILION A PHOENIX

THE Gaumont Cinema, Shepherds Bush, which made history in 1923 as the Shepherds Bush Pavilion as being the first cinema to gain the London Architecture Medal award, has now been reopened after lying derelict since the early years of the war, following bomb damage. Indeed, this award to the late Frank T. Verity was only the second of these medals to be given, the first being to Mr. W. Curtis Green in 1922 for Wolseley House, Piccadilly.

The rebuilding has been carried out by Mr. Verity's son-in-law, Mr. S. Beverley, FRIBA, who has left the exterior virtually untouched, apart from an apparent widening of the main entrance by the removal of two columns, the installation of a new canopy and some shelter at the side for those who queue.

The most marked effects of the reconstruction are to be noticed in the auditorium, where the height of the ceiling has been considerably reduced. The whole of the 55-ft. wide proscenium opening is taken up by the new type "specular" screen, the size and shape of which can be instantly altered by remote press-button control.

APPEAL FOR OLD MILL

IN RECENT years a number of the fine old windmills that once graced the English countryside have fallen down through decay, which makes it all the more important that a similar fate does not befall those that remain. An appeal is now being made for £2,500 for the repair of the sails and the painting of the Union Mill at Cranbrook, Kent, one of the largest in the south of England. It was built by Humphrey the Millwright.

In appealing for donations, Miss V. Sackville-West describes how this old mill, "like a shepherd in his smock, stands on a rise of the ground, dominating the clustered flock of roofs and narrow streets of the small ancient town of the Kentish Weald. Unlike the majority of windmills in this country, Cranbrook Mill is not obsolete, but can still work according to the proper function, turning mannerly in the wind, with that slow gravity of revolving sails. It does not perform this function very often now, because an electric motor does the work more easily. Yet in the mists of Spring and autumn the mill presides, a great grey ghost, lifting benevolent arms in a sort of benediction over the little town."

Contributions may be sent to the Hon. Secretary, Wind and Watermill Section, the Society for the Protection of Ancient Buildings, 55, Great Ormond-street, WC1.

CHANCE FOR THE OVER-40's

THOSE WHO SUBSCRIBE to the "too old at 40" theory evidently do not include in their ranks the Stockport building firm who, in advertising for bricklayers, make the stipulation: "No one under 40 need apply." The secretary of the firm, Messrs. Hugh Owen and Son, has stated: "We find that older men will take more pride in their job, whereas a younger man will be more concerned with working faster to earn more money. Not all young men are like that, of course, but, generally speaking, the older man has a better sense of pride in the job and greater loyalty."

COMING EVENT

MONDAY, AUGUST 22

TOWN PLANNING INSTITUTE.—Town and country planning summer school. University of Cambridge. 8 p.m. Continuing until August 27.

THE DICK SHEPPARD LCC SECONDARY SCHOOL FOR GIRLS.—A view of this new school at Tulse Hill, SW2, which is to be opened in September, showing the four-storey classroom block where the classrooms have natural lighting from both sides (either direct or with one side by borrowed light from a corridor). The architects are Messrs. Yorke, Rosenberg and Mardall, FF.RIBA. The school has been designed for 960 places, at an estimated cost of £309,000.

CORRESPONDENCE

REBUILDING THE CITY

To the Editor of *The Builder*

SIR,—In his article on this subject in your last issue, Mr. Jasper Salwey wrote: "It would, therefore, seem that a modified application of the classic motif is the only possible solution if the large new buildings are to mingle satisfactorily with that which stands and is to be preserved."

This assumption does not offer much hope of architectural progress. That we should have to go backwards for fear of stumbling if we go forward suggests a strange lack of confidence in our ability to "stand on our own feet." The medieval builders and the architects of later periods rarely looked back except to improve on what had gone before. Wren, when the great opportunity to design a new St. Paul's came his way, completely ignored Gothic and built in the new and exciting style of the Renaissance. If he had heeded what had gone before, the new St. Paul's would probably have been a sort of inflated version of St. Mary Aldermary (Wren's idea of "Gothic") instead of the splendid monument we see to-day. Moreover, architectural progress might have been deferred for at least a generation. Nor is it true that buildings must be of the same style if they are to "mingle satisfactorily," as one can see by a glance along the high street of many an old town.

Let us have less looking back and more looking forward. We have plenty of architects who could design buildings for the new City that would be neither "bad copies of past styles" nor "packing crates"—buildings that would not only be expressive of the needs, ideals, materials and techniques of our own time, but would also blend with existing work.

For your private eye, Sir, I enclose a list of half-a-dozen firms of architects that I would back to give us the fine new City we need, but so far as I am aware not one of them is doing any work there. The problem could be solved at once if developers could be brought into touch with the right architects. Unhappily, vested interests and questions of professional etiquette are obstacles that stand in the way of that solution.

SPERO.

QS REGISTRATION

To the Editor of *The Builder*

SIR,—May I congratulate Mr. Arthur J. Willis on his letter in your issue of July 22. I for one, although not belonging to that illustrious body the RICS, appreciate his fight for the quantity surveyor.

I am convinced, however, that all qualified quantity surveyors of any of the recognised societies are more concerned with statutory protection which the architect already has, and which the quantity surveyor who works in close collaboration with the architect should have. Second paragraph, page four of the Standard Method of Measurement of Building Works applies to surveyors of

other sub-divisions than quantities sections producing rubbishy material which passes for bills of quantities to unsuspecting building owners, or to the man who is out to get a cheap job, as much as to the unattached surveyor with both little knowledge and experience.

The only persons, I should imagine, who would have little or no interest in registration would be heads of large practices who are exponents of "mass production." In my humble opinion it is time the quantity surveyor came into his own, and took his place with the architect away from all other classes of surveyors, and the public would then have a guarantee that the bills of quantities they paid for would be authentic.

A. N. HOOKWAY, [AIAS].

Thundersley, Essex.

SPEEDY BUILDING, GERMANY

To the Editor of *The Builder*

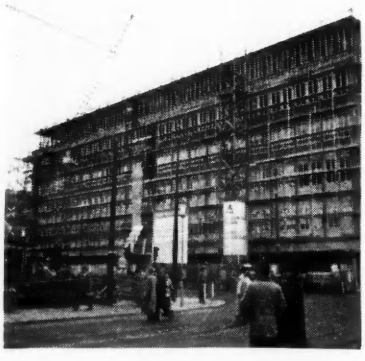
SIR,—A building recently completed here in Osnabrück may be of some interest to you, if not for its originality in design then for the speed with which it has been built.

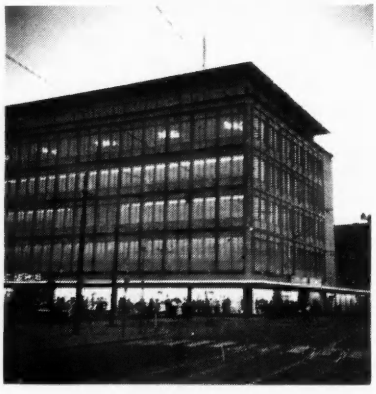
I first came here on March 26, this year, and the building, or rather its reinforced concrete (cast *in situ*) shell, was two storeys high. Work on the footings originally began, apparently, about the second week of February, 1955. The photograph showing work in progress with the two tower-cranes in operation was taken on May 1. The progress then was almost alarming to one used to the more steady rate of building in England.

The building in its completed form (as shown on the second photograph) opened on July 7. By that date the whole job was completed down to the smallest detail of shopfitting, and the whole store was completely stocked with a great range of goods, including an excellent cafeteria on the top floor. Although, on close inspection, the workmanship of the finishings does not appear too good, I think you will agree that the store has been built remarkably quickly; less than five months from start to finish.

D. G. WILLDAY.

Osnabrück, Germany.





An example of speedy building in Germany is seen in these two photographs of a store at Osnabruck photographed (top) on May 1 and again on July 7 (see letter).

"SOUTH KEN.": CENTENARY OF AN INTERESTING BUILDING

To the Editor of *The Builder*

SIR,—Just about 100 years ago the first South Kensington Museum building was erected at the instigation of Henry Cole, Secretary of the Board of Trade, who had done so much to promote the 1851 Exhibition, and who developed out of it a special Department of Practical Art within the Board of Trade and a Museum of Manufactures. This museum, first located at Marlborough House, had to find a new home when the mansion in The Mall was taken over as a residence for the Prince of Wales.

As *The Times* recalled recently in an extract from its issue for August 3, 1855, a Mr. Spooner objected in the House of Commons to the vote of £15,000 for the new building because the opinion of the House had not been taken upon it and (rather oddly) because "the distance from London at which it was proposed to erect the museum was too great for the mass of the inhabitants of the metropolis to avail themselves of its advantages." Lord Palmerston, in reply, pointed out (with some lack of prophetic vision) that this was "not the beginning of some great and vast building;" the object was to construct a cheap and durable building at a comparatively small cost to house the different collections.

The interest of this building for us is that it was one of the earliest examples of prefabricated, demountable, cast-iron frame construction deriving from the Crystal Palace. Rectangular on plan, it consisted of a nave and aisles formed by ranges of thin stanchions and girders covered by three rows of arched tie-trusses roofed over with corrugated-iron sheets, with monitor skylights running the full length of the roofs. The nave was of two storeys and there were upper galleries over the aisles. The structure was clothed in sheets of corrugated iron.

George Godwin, Editor of *The Builder*, who was laying out the near-by Boltons on the Gunter Estate, West Kensington, about this time, developed an intense dislike for the new museum building and attacked it vigorously. He contemptuously dubbed it "The Brompton Boilers"—a name suggested by a boiler-house of rather similar construction that had been erected to provide steam power for the Crystal Palace. The name stuck and did much to discredit the building and, indeed, prefabrication generally.

"The Green Belt is meant to surround the Borough, Mr. Mayor, but I doubt if it would encircle the Corporation!"

This forerunner of the great aggregation of museum buildings at South Kensington is not, of course, to be found there to-day. It was taken down in 1871 and re-erected at Bethnal Green, where it still is structurally intact though now enclosed in a brick shell, added from the designs of J. W. Wild. The centenary of this interesting building ought not, I feel, to go unnoticed.

K. GORE.

STREETS AS PUBLIC HIGHWAYS

To the Editor of *The Builder*

SIR,—I was most interested in the query and answer in connection with streets as public highways (your issue of July 29). My problem is a similar one. I have intimated to the Highway Authority concerned that I wish to enter into an agreement under Section 146 of the Public Health Act 1875 for the future adoption of certain proposed estate roads on the understanding that they be constructed to the specification and under the supervision of the Highway Authority.

As with the case of "R. V." I am told that the proposed adoption cannot take place until such time as the adjoining road (not part of our estate) is made up and adopted, thus giving our estate direct connection to an adopted road. I have also been told verbally that procedure for such an agreement has to be in accordance with the Private Street Works Act 1892. Surely this Act does not cover such procedure? Are not, in fact, all such agreements governed by Section 146 of the Public Health Act, 1875?

I am also told that all roads will be subject to a 12 months' maintenance clause, subsequent to completion, as opposed to the six months' maintenance prescribed by Section 146. Any comments on these queries would, I am sure, be appreciated by other estate developers quite apart from myself.

JOHN A. ROBERSON [ARICS].

60, Greenways,
Beckenham, Kent.

SOLVING NEW YORK'S TRAFFIC PROBLEMS

From a New York Correspondent

LAST year over 76m. vehicles, almost double the pre-war volume, crossed the Hudson River in New York. An additional 4m. vehicles crossed Upper New York Bay by ferry. Traffic estimates indicate that as early as 1960 a total of 105m. vehicles, an increase of 30 per cent. over last year's volume, will demand crossings of the Hudson River and Upper New York Bay, and by 1975 this demand is estimated to reach 180m. vehicles. Similar traffic growth is expected on the East River crossings, on the other side of Manhattan.

A $600m. programme to meet the arterial highway demands of New York's metropolitan area for the next two decades has been put forward in a joint report made public by Howard S. Cullman, chairman of the Port of New York Authority, and Robert Moses, chairman of the Triborough Bridge and Tunnel Authority. Some details of the programme are given below.

World's Longest Bridge across the Narrows.—One of the main links to be constructed under the new programme is a $220m., twelve-lane, double-decked suspension bridge across the Narrows, linking Fort Hamilton in Brooklyn with Fort Wadsworth in Staten Island.

The bridge, including the immediate approaches, will be over 2½ miles long. From anchorage to anchorage it will extend 7,200 ft. with a 4,400 ft. centre span, the world's longest. This compares with the 4,300 ft. centre span of the Golden Gate Bridge in San Francisco and the 3,500 ft. centre span of the George Washington Bridge in New York. The bridge towers will rise 700 ft. from the roadway, which will be suspended 237 ft. above the Narrows at mid-channel. Clearance will be sufficient for all commercial and naval shipping.

George Washington Bridge—Lower Level.—The addition of a six-lane lower deck to the famous George Washington Bridge (built in 1927-1931) is recommended in the joint report. With appropriate approaches it will add 75 per cent. to the present hourly capacity of the bridge. The cost will be over $82m.

The bridge was designed originally to support a second deck for either rail or vehicular traffic. Only minor changes at the anchorage will be required to permit the addition of a lower deck providing two three-lane roadways each 36 ft. wide between curbs. There will be a minimum clearance of 15 ft. between the lower deck roadway and the upper deck, with clearance of 204 ft. above mean high water at the centre span.

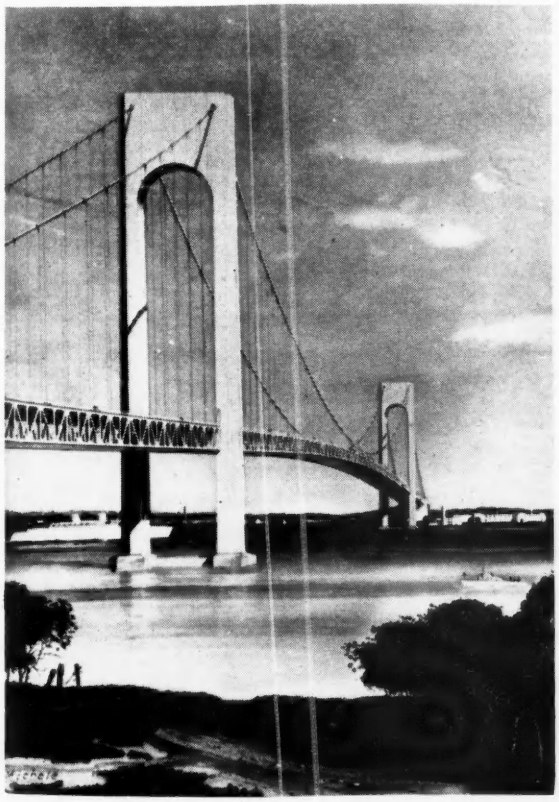
Throgs Neck Bridge.—The third main point of the new building programme is the construction of a $93m. bridge across the East River to be known as the Throgs Neck Bridge. It will be a six-lane suspension bridge extending across the East River from Cryders Point on the west shore of Little Bay in Queens to Fort Schuyler at the tip of the Throgs Neck peninsula in The Bronx.

The bridge will extend 5,200 ft., including anchorages. The centre span will be 3,100 ft. long and the side spans each 900 ft. long.

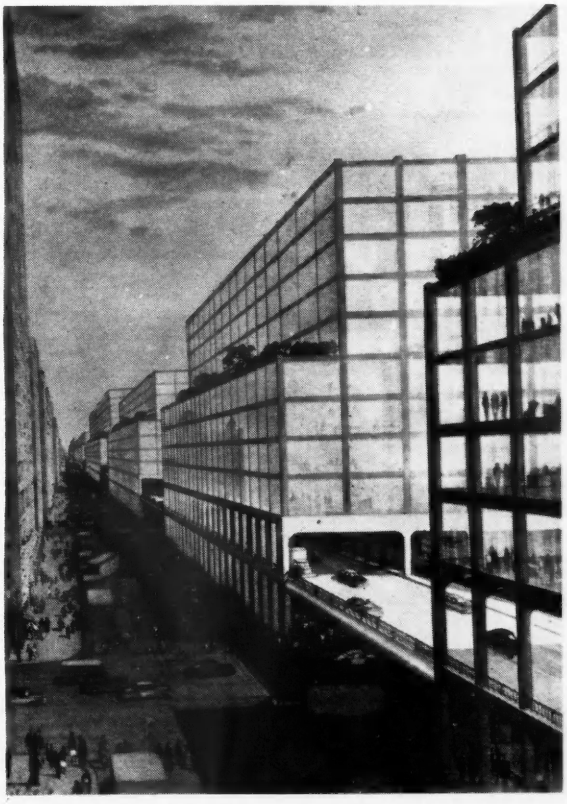
The Narrows Bridge has been a dream of engineers and planners for 50 years. Future traffic volumes forecast by the joint study consultants may demand a fourth crossing of the Hudson River within 10 years. Further consideration of the fourth crossing, however, has been deferred until the George Washington Bridge-Lower Deck, the Narrows Bridge and the Throgs Neck Bridge projects are completed and opened to traffic.

There are many more projects connected with the new programme as recommended by the joint study, one of the most interesting being the proposed extension of the New Jersey Turnpike, a highway of modern construction.

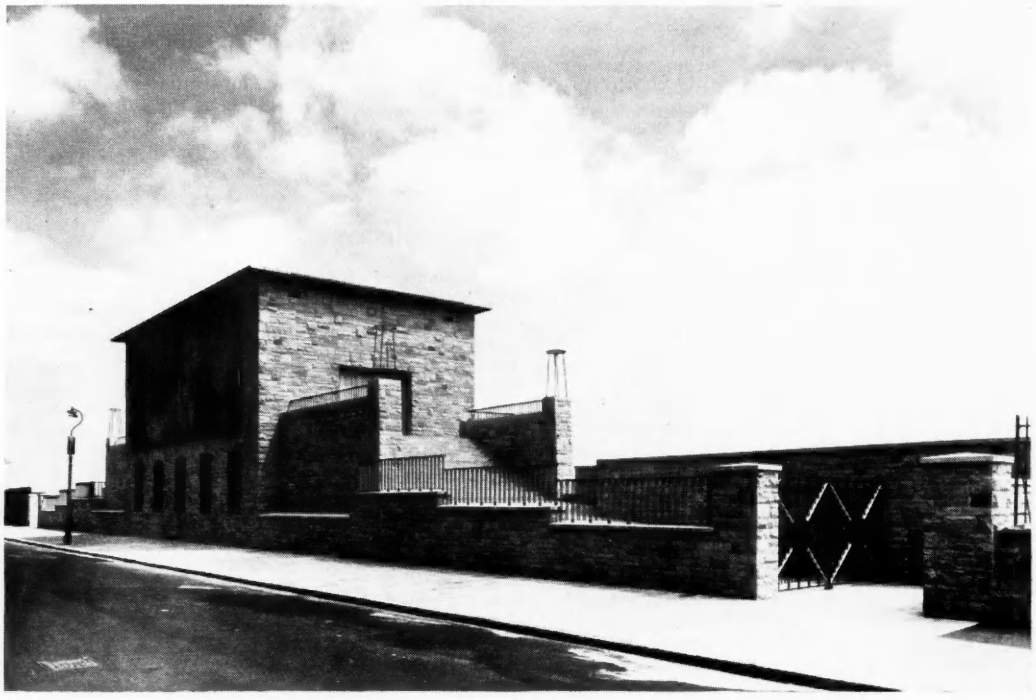
Two elevated express ways across mid- and lower Manhattan at a cost of $77m. and $72m. respectively would solve the difficult problem of cross-town traffic in Manhattan. One expert called these projects so vital to "unsnarling" city traffic that some way must be found to construct them in the not too distant future.



A perspective of the proposed Throgs Neck Bridge across the East River which, when completed, will provide Richmond with easy vehicular access to other parts of Greater New York.



To solve the difficult problem of cross-town traffic in Manhattan the construction of two elevated express crossways is suggested. Hitherto such projects have been turned town on grounds of cost.

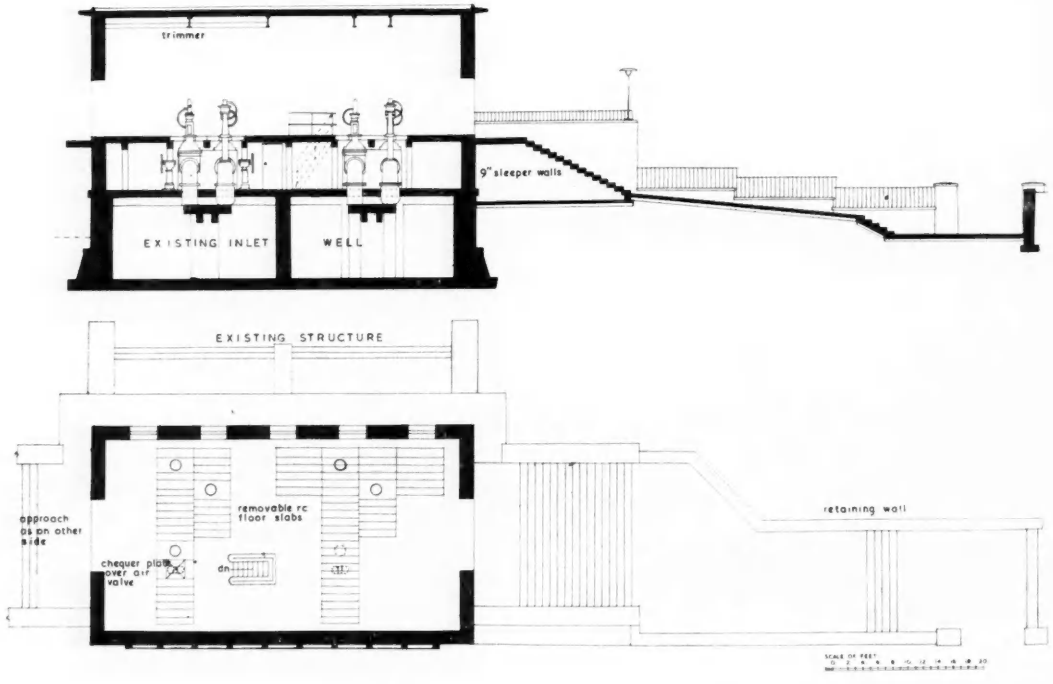


View of building from the road.

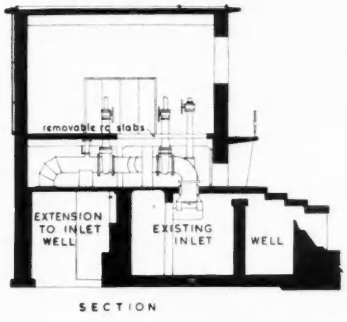
Haweswater Aqueduct: Heaton Park Inlet Well House

LEONARD C. HOWITT, MArch, DipTP, FRIBA, MANCHESTER CITY ARCHITECT

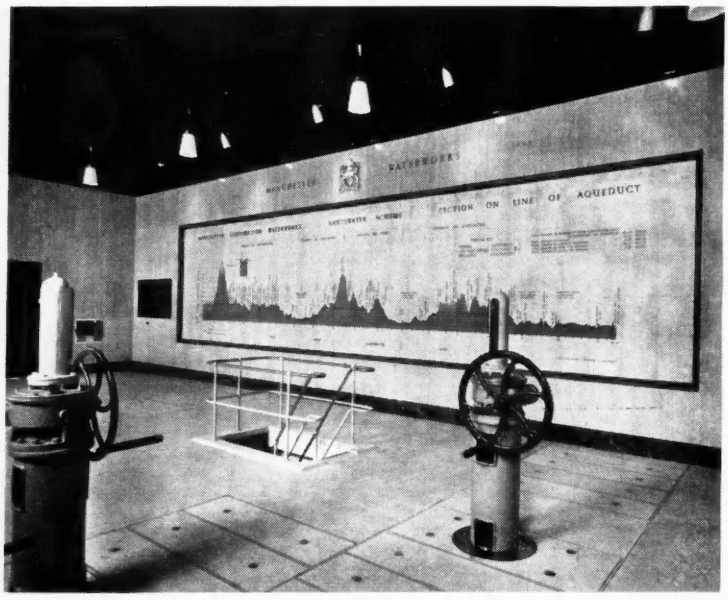
G. & J. SEDDON, LTD., Builders



Shown above is a detail of the great bas-relief designed and carved for the main front of the well house. Westmorland green stone has been used by the sculptor, Mitzi Cunliffe. The dimensions of the panel are 41 ft. 6 in. by 16 ft. The sculpture is intended to symbolise the origin and course of the aqueduct, and to pay tribute to the men who constructed it. Under the sculpture can be seen the Commemorative Panels which record details of the undertaking and the names of the local representatives and officers who have been associated with the project. Below is a view of the well house from the reservoir.



Section through Well House.



Interior of the Well House, showing scale sectional diagram.

THIS building is the terminal point of the 82 miles long Haweswater Aqueduct recently completed at a cost of £14m., under the direction of Mr. Alan Atkinson, MEng., MICE, MIWE, the Engineer and Manager of the Manchester Waterworks Undertaking; and is also the terminatory point of the older two Thirlmere Aqueducts. The City Architect, Mr. Leonard C. Howitt, MArch, DipTP, DPA, FRIBA, MTPI, was requested to design a building which would not only fulfil the utilitarian purpose of housing the control valves and measuring devices, but would also contain a scale sectional diagram of the line of the Aqueduct in relation to the contours and tablets recording details of the undertaking and the names of the local representatives and officers who have been associated with the project. The building was also required to have a certain monumental character (despite the rather restricted site between a suburban road and the edge of the reservoir), giving appropriate expression to the magnitude and importance of the undertaking.

The external masonry is of Yorkshire Sandstone from Messrs. Jaggar's quarry at Haworth (of Brontë fame), and not only for its own value but because of the associations with the other end of these great aqueducts, the external sculptured and commemorative panels are of Westmorland green stone from the Broughton Moor Quarry. The interior walls are lined with filled cream Travertine with the skirting and door surrounds of Swedish green marble. All joinery is in teak; the large panel which is the background of the sectional diagram is in sycamore veneered blockboard. The ceiling is painted dead black to minimise the distraction of the irregular positions of overhead lifting beams.

The dominating feature of the exterior is a great *bas-relief* 41 ft. 6 in. by 16 ft. designed and carved in Westmorland green stone by Mitzi Cunliffe. This sculpture symbolises the origin and course of the aqueduct and pays tribute to the men who constructed it. The commemorative panels are below and include space for the recording of further developments in the future.

The cost of the building (not including the concrete sub-structure and water engineering works), is approximately £27,000. The electrical installation was by the Manchester Corporation Waterworks M. and E. section; and the water supply installation, pipes, valves and meters, were installed under the direction of the Manchester Corporation Waterworks. Sub-contractors and suppliers were:

Sherratt and Smith, Ltd., Salford, structural steelwork; Conways (Tiles and Terrazzo), Ltd., Manchester, terrazzo floor tiles and surrounds; C. Musker Bros., Ltd., Swinton, precast concrete roof units; J. Hall and Son (Oldham), Ltd., Oldham, internal metal staircase; B. Kendall, Newby, near Lancaster, external masonry; J. and H. Patteson, Ltd., Manchester, external slate panels and internal travertine and marble wall linings; T. Blackburn and Sons, Ltd., Preston, railings and gates; S. Newton and Co., Ltd., Salford, internal map and commemorative panels, bronze letters; Falk Stadelmann and Co., Ltd., Manchester, and Hailwood and Ackroyd, Leeds, lighting fittings; and Bond and Hall, Manchester, carved coat of arms.

WELL HOUSE FOR HAWESWATER AQUEDUCT

PEACEFUL USES OF NUCLEAR ENERGY

Official Handbook Published

COINCIDING with the international conference at Geneva on the peaceful uses of atomic energy, a popular illustrated booklet, "Nuclear Energy and its Uses in Peace," was published on August 15 by HMSO for UNESCO (price 2s. 6d.).

Sir Winston Churchill, as Mr. Gerald Wendt, author of the booklet, reminds us, has described the advent of the nuclear age as "a turning point in our destiny," and the Director-General of Unesco, in introducing this new Unesco publication, emphasises the urgent need for the public to understand the facts about the new knowledge which is opening a new era for mankind.

Opening with an elementary discussion on energy and fuels, the booklet, well and clearly illustrated with charts, line drawings and photographs, introduced the non-scientific reader to the new world of controlled nuclear fission and its vast implications for the future.

After explaining the basic principles of nuclear "reactors," Mr. Wendt goes on to discuss the economies of producing power from reactors, and then to the immensely wide uses which can be made of some of the by-products of the reactors—radioactive substances, particularly "radioisotopes."

On the economics of power production, Mr. Wendt gives some interesting facts and figures. He first points to the intimate relation existing between the consumption of coal (or energy) per head of population and the standard of life (or income) in the country concerned. Thus, the coal consumed per person in the United States is 8 tons per year; in the United Kingdom and Norway it is 4.5 tons; in Japan, 1 ton; and in India about 0.1 ton. In comparison, the average income per person in the US is about 2,000 dollars; in the UK and Norway it is 1,000 dollars; in Japan 100 dollars; and in India 50 dollars.

But nuclear fuel has two enormous advantages over coal and oil. The cost of transportation is negligible—20 lb. of uranium would produce enough electrical energy for a large city for a year. And a "breeder" reactor has the remarkable property that, given a supply of uranium 238, it can produce more atomic fuel than it uses. Thus, although where coal is plentiful and easily worked, energy produced from atomic fuel is still more expensive than that produced from coal, because of the large initial capital expenditure required, this is even now not true of areas without coal supplies; and in due course it can be expected that atomic energy will be uniformly cheaper.

Potentially among the most important applications of radioisotopes is that concerned with the use made by plants of the energy from the sunlight falling on their leaves. An improvement in their efficiency could greatly increase the world's food supply.

"But," says Mr. Wendt, "what impends for the world in the nuclear age is far larger than the scope of science.... Nuclear power and its by-products may eventually have as great an impact on the pursuits of peace as the atomic bomb had on those of war.... But it demands a new strategy, too, in the plans of governments and of the international organisations."

English Church Architecture

ALFRED BOSSOM LECTURE TO RSA

THE subject of the Alfred Bossom Lecture delivered to the Royal Society of Arts, London, by MR. A. B. KNAPP-FISHER, FRIBA, FSA, HonARCA, in the spring was "English Church Architecture." Sir Alfred Bossom, Bt., FRIBA, MP, was in the chair. Extracts from the lecture are given below:

We are dealing with an art which, at its best, transcends ordinary building. We have all experienced, from time to time, on entering a cathedral or a church, an exalted feeling of rapture, and few will deny that in church architecture it is given on rare occasions to architects, craftsmen and artists engaged in such work to reach the heights and to rub shoulders with the gods. For 500 years our ancestors built churches with an urge as if their lives depended on them. To-day the Church of England and other denominations are building churches in the new towns and elsewhere by the score, knowing that the lives of the younger generation who will live in these towns and building estates, do depend on them. First it should be noted that the true Anglo-Saxon style was short lived. Nearly all parish church plans may be traced back to two origins, Basilican and Celtic, from the south and the north respectively, and later we see emerging a two-cell plan—Nave and Sanctuary — which curiously enough, after the elaborate and magnificent contributions to church architecture of the Middle Ages, our enforced stringent economies are bringing into use again, and we see to-day a new two-cell plan being adopted to fulfil, apart from economy, the need and desire for a more compact form of plan where congregation and choir are brought nearer together, and the high altar nearer the congregation. A plan where everyone can see and hear all that is going on: in short, a two-compartment building of auditorium, or nave, and sanctuary.

NORMAN INFLUENCE

The coming of the Normans was the prelude to the splendid growth of English medieval church architecture. First, the Abbey Church of Westminster, built for Edward the Confessor (who was Norman by association and education) by foreign workmen in a style which caused astonishment to the English. Such astonishment combined with abuse, often of the most virulent kind, has been associated with many new styles of church architecture throughout the centuries, especially, perhaps, Wren's new St. Paul's following the destruction of the old cathedral.

Churches built during this century of Norman or "Romanesque" architecture can be numbered in thousands. There had, of course, been nothing like it before or for that matter has there been anything quite like it since. To-day the Church of England is again faced with an immense building programme if the needs of an increasing and shifting population are to be met.

It is estimated that some 14,000 churches, chapels and other ecclesiastical buildings suffered damage in Great Britain and Northern Ireland during the war and, sad to say, the best that an impoverished nation and church can do is to restore these buildings, not in the traditional magnificence of a Bernini or a Wren or an Inigo Jones, but in what the War Damage Commission calls "plain repair" (though let me add that the Ecclesiastical Authorities and the Commission are not ungenerous in the contributions they make within the limited means at their disposal; but the fact remains that for the most part, fine craftsmanship, fine painting, and sculpture must to-day be used sparingly, and here is at once an opportunity and a challenge to architect and patron alike).

It is my belief, however, that with the right advice, good churches, used if necessary for the time being as church halls as of old, can be built economically if we accept as a conclusion a greater simplicity of character such as is often seen on the Continent, where small two-cell churches so often delight the eye. Such churches need not disgrace the traditionally high standard of our country.

Architectural history is usually divided into arbitrary sections, but it is surely wiser to see it as a whole, the better to fortify and nurture us. After the Normans we enter a period roughly covered by the thirteenth and fourteenth centuries, when medieval church architecture was at its very best—dynamic and sublime. The spirit of Chaucer seems to have breathed in this blithe and graceful period of "Early English" and "Decorated" styles, as they are conveniently called, and it is astonishing that in such turbulent times of war, pestilence, and civil disturbances, the sculptured beauty and purity of so many of our cathedrals and churches, reached such great heights. Here were artist and constructional genius joining hands in providing architectural form of the highest order by means of light mechanical structures of thrust and counterthrust, in delicate equilibrium—an architecture, which at its best, has never been surpassed.

PERPENDICULAR STYLE

The Black Death (1348-49), already mentioned, did in fact adversely affect the church architecture of the fourteenth century, it carried off a third of the population, and for some years paralysed all architectural activity. It was during this period of interruption that the so-called perpendicular style gained its first sure footing in English church design.

The tracery and ornament abroad became more and more elaborate and flamboyant. We never took to this style, partly no doubt, due to our simple and more staid and reserved character, and partly because the plague had depleted the ranks of skilled masons. We sought refuge in a style which was immeasurably simpler in its setting out and rendering, and so the perpendicular or rectilinear style became our great contribution to church architecture.

About the year 1500 the secretary of the Venetian Ambassador to London wrote a revealing document of the wonder

Drawn by Ronald Sims. *RA Exhibition, 1955.*

PUNSHON MEMORIAL METHODIST CHURCH, BOURNEMOUTH.
Ronald H. Sims and Patrick J. Coles, AA.RIBA, Architects.

inspired in a citizen of one of the most beautiful cities in the world, by the number, size and opulence of the churches throughout London, and our country as a whole. He said, "the world had nothing to show more splendid than the shrine of Edward the Confessor in Westminster Abbey unless it were the shrine of St. Thomas in Canterbury Cathedral." In particular he was amazed by the magnificence of the works of craftsmanship with which these churches were embellished.

In little more than a generation, he goes on to say, a great part of this beauty had perished. Of what survived, much was destroyed by the Puritans of the seventeenth century. Woefully indifferent to these two acts of iconoclasm, the eighteenth century neglected what was left, and the nineteenth century did, for the most part, incomparably more harm by indulging in a clumsy and uninspiring destructive "restoration."

When church building started again towards the end of the seventeenth century, it was to bring, as everyone knows, a fundamental change in church architecture, a fresh departure, a revolution, which began with the tentative efforts of imported craftsmen reaching its highest degree of attainment in the hands of Inigo Jones, Wren, Vanbrugh, Hawksmoor, Gibbs, and their disciples.

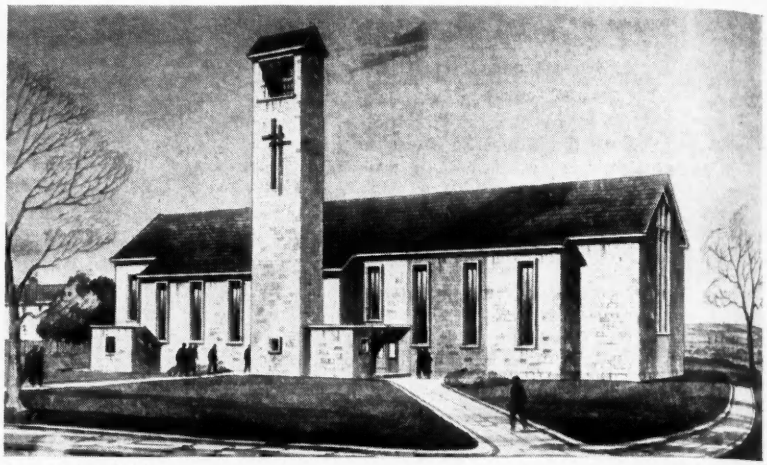
A point about the churches built at this time was that they appealed to the outlook and the mood of the period, and supplied the sort of church best suited to the puritanical trend of popular feeling and the Protestant churchmanship of the times.

WREN'S GREAT INFLUENCE

If there is one English architect whose name is known to most people it is Sir Christopher Wren; and it is fair to say that the revolution in church design effected towards the close of the seventeenth century was largely brought about by this one man. It is, I think, particularly interesting to note that the character of Renaissance architecture was chiefly determined not by national traditions and developments, but by the personality and training of individual architects, and the greater the men, the greater was their influence, not on architecture alone, but on the men who surrounded them, and even on those who came after them.

Inigo Jones was also a genius with a dominating personality and was responsible for the remarkable change which took place in the late Stuart times. His prolonged studies in Italy, more especially of the works of Palladio, influenced all his work. His one considerable contribution to church architecture is St. Paul, Covent Garden, and the injunction of the Earl of Bedford to erect a church as simple and inexpensive as a barn has an echo to-day, and might well be an instruction from any Diocese to any church architect at the present time.

To return to Wren, the country owes him a debt of undying gratitude, for he created a new conception of usage and arrangement in churches designed for Protestant worship and preaching, the chief characteristic of his churches being a rich and decorous simplicity.



Drawn by John J. Adams. *R.A. Exhibition, 1955.*

CHURCH AND HALL, CHADDESDEN ST. PHILIP, DERBY.
Stanley W. Milburn & Partners, Architects.

The Gothic Revival that followed immediately on the classic period and the age of revivals generally is a fascinating study. Religious influences of different kinds were at work. The country was immensely prosperous. Regiments of Victorian houses were erected row upon row in unending and unwearying monotony for the professional and middle classes. These people went to church a little smugly and snobbishly perhaps, so churches in their hundreds were erected to meet the needs of the Victorian Sabbath and the fashionable custom of church-going.

Let it be said at once, however, that while some of these churches displayed grace, proportion and individuality, many more were cold, unemotional and uninspired copies of a very different age and outlook, and seemed to reflect the craze for applied science which was making such unprecedented progress at the time. Certain architects of the period, however, produced work of real distinction. Pearson's St. Augustine's at Kilburn, and Hove Parish Church (unfinished) come to mind, and the younger G. G. Scott's St. Agnes at Kennington.

In reviewing the situation as we see it to-day, we can at least be thankful that we are freed from the influence of Revivalism: I think it may be said that architects are striving with a fair measure of success to establish a type of church building in tune with modern needs. Certainly restoration is becoming more tolerant and informed, thanks largely to the Central Council for the Care of Churches, and the Diocesan Advisory Committees, and the Historic Churches Trust, and brave attempts are being made to educate the public taste towards a better appreciation of the English heritage of parish churches.

Before the last war, a new architecture was being developed. Continental influence was at work and this, coupled with the increased supply of steel, the more practical use of reinforced concrete, and the revolt against romanticism and tradition, and unnecessary architectural embellishments, ushered in what was supposed to be a more functional architecture which had come to stay whether we liked it or not.

A Christian church is no ordinary building; its erection is an act of worship, it is the House of God. It is different, and should look different, from other buildings. However simple it be—and most of the new churches will have to be very simple—it must inspire and be an invitation to worship, a visible challenge in a materialistic age. Geoffrey Scott exposes the mechanical fallacy when he writes: "The art of architecture studies not structure in itself but the effect of structure on the human spirit."

It has been said that it is traditional to be modern, and looking back at the whole sequence of traditional styles (Romanesque, Gothic, and Renaissance), it will be seen that this is very true. While it is right and good to capture the spirit in all that is best in traditional work, it must be understood that the new churches in the new towns, built in a new way with many new materials, will not, and should not, I think, look exactly like a traditional church, provided they possess an individual quality which proclaims their purpose, and reflects the doctrine preached within.

COVENTRY CATHEDRAL

Here, while talking about the contemporary outlook, may I say one word about Coventry Cathedral, in particular the inside. I believe the interior when finished would, if he had been alive, have excited and roused the admiration of that fifteenth-century Venetian of whom I have spoken. The latest perforated patterning to some of the vaulting to me looks very well, and this together with other amendments and improvements, lead one to look forward to a cathedral interior which, in design, will be of our age and times and, I believe, a very great credit to them. Here is no sterile bareness as in so much modern work, but a building productive of the arts, and complementary to tradition—a fruitful off-

spring of the church architecture I have been talking about.

If, in most churches, we are to reduce cost to a minimum, the form that they take will be a primary consideration: most of them will have to conform to a simpler plan and section. Roofs must be generally lower, traditional arcades omitted, and plans must be more straightforward and easy to roof. There must be, alas, little or no waste space, and the outside must be shorn of many excrescences. Often in the past churches have been too big and over-elaborate, and difficult to maintain. On the other hand, a modern church must be a building where everyone can see what goes on, hear easily, and sit and kneel at ease.

Although there is a beauty in spaciousness that is not to be lightly discarded, economy of space is necessary to-day, but the minimum requirements laid down by the Incorporated Church Building Society should be rigidly adhered to. There should be no cramping in sanctuary, chancel, or nave, and everyone who has anything to do with church building would be well advised to study the Society's notes on architectural requirements and suggestions for new churches. The focal point is, of course, the altar, around which the elements of the Christian faith are centred. In medieval days, the altar was generally situated at the end of a long chancel, and when surpliced choirs were introduced in the last century they were usually placed between the sanctuary and the congregation, often with a screen still further cutting off the main body of worshippers from the altar itself. This practice is deeply rooted in the hearts of many English people.

POSITION OF THE ALTAR

It is, however, being realised more and more to-day—which to some extent is carrying us back to early Christian days—that the altar should not be so far removed from the congregation, but should be more in the midst of the people, hence the tendency in contemporary churches to flatten the sanctuary (taking care to provide plenty of space between altar and communion rail) and dispense with "the choir" as such—either merging it into the congregation, or reverting to the eighteenth-century position and placing it in a gallery at the west end, or alternatively, on one or other side of the nave. A surpliced choir amongst the congregation can be a disturbing element, and great care is needed in its planning. What to-day is considered a further advantage is that the pulpit and lectern should be placed to command both choir and people.

The size and kind of altar is of paramount importance; a long altar is always more dignified and impressive than a short one, and a length measuring two-fifths the width of the sanctuary should be the minimum aimed at. Rich and striking materials can be used with great effect for frontals, curtains, etc., and often look their best in a simple whitewashed setting.

The entry into a new half-century of financial stringency coincides with a new era in church building. Some people will cling to the opinion that standards should not be altered—no one would advocate a lowering of them. Others, that in the world as we find it to-day, we should adjust our ideas and produce churches of greater simplicity (for the time being at any rate), shorn of many of the accustomed features we have grown up to know, and avail ourselves of prefabrication and standardised parts, making a virtue of necessity and avoiding a narrow orthodoxy. When all is said and done, few will quarrel with the view that our churches should be an expression of our own age and not live on as an anachronism.

Few of us can feel complacent about civilised values to-day; informed appreciation and criticism of church building, and all that goes with it, seems to be sadly lacking. Any decline in the quality of a nation's architecture is evidence of its economic and moral impoverishment, but vital design is a measure of a country's well-being, a civilising influence. It would be good, once again, to weave this art into the fabric of our lives and thereby revive and stimulate a greater desire for church-going.

*** The illustration shown formed no part of the lecture.—ED.

COMPETITION NEWS

House for the Professional Man

REGISTERED architects are being invited by Tretol, Ltd., to submit designs in competition for a house for the professional man. The following premiums are being offered: 1st £250; 2nd £150; 3rd £100. The promoters have appointed Mr. Clifford Culpin, FRIBA, as the assessor of the competition.

The general conditions state that the house is described as a house for the professional man on the assumption that a professional man would be likely, by virtue of his education and background, to appreciate and make proper use of a house that is possibly a little more imaginative in conception than that following the common pattern. On the other hand he would not be expected to want something so startling as to be certain of rejection by the planning authority. The house is required for the professional man's residence and the inclusion of, for instance, a consulting room, is not required.

No other suggestions as to accommodation are put forward but it is suggested that, in view of increasing fuel costs, consideration should be given to minimising heat losses and providing heating of an efficient type. The promoters have left the assessor free of any obligation to be influenced in his decision by the use of their products.

The cost of the house, excluding garage but including normal external works, is to be £4,250.

All designs must be submitted to Tretol, Ltd., Building Centre, Store-street, WC1, by November 8. No questions relating to the competition will be answered. Conditions may be obtained from Tretol, Ltd., Tretol House, The Hyde, NW9, on payment of a deposit of one guinea (cheques to be made out to "Tretol House Competition").

OBITUARY

S. B. Russell, FRIBA

A CORRESPONDENT writes: I regretted to see the announcement in your last issue of the death of Mr. S. B. Russell, at the age of 91. A few facts may be added to your brief notice. In the early years of the century he practised in partnership with the late Sir Edwin (then Mr.) Cooper, under the title of Russell and Cooper. They were both strong individualists, however, and the partnership broke up.

Russell went into practice on his own account and did much excellent work. Towards the end of the 1914-18 war he joined the Ministry of Health (about the same time as did the late Sir Raymond Unwin) as a principal architect and was mainly responsible for the great advance in the standard of official housing in the following years. He was an architect of the old school, an able and likeable man.

H. V. Kerr, FRIBA

WE REGRET to announce the death on August 10, of Mr. Hume Victor Kerr, FRIBA, of the firm of Messrs. Victor Kerr and Colbourn, Bedford-row, WC1. Mr. Kerr was elected a licentiate RIBA in 1927 and a fellow in 1930.

T. B. Ball, ARIBA

THE SUDDEN death occurred at his home at Weston-super-Mare on August 11 of Mr. Theophilus Bradford Ball, ARIBA, partner in the firm of Messrs. Ball and Pope. He was 80.

Mr. Ball had been in practice for many years with Mr. Pope, and for about 30 years had been architect to Axbridge Rural District Council, carrying out many housing schemes for them. He had also been a building inspector for Weston Borough Council for some time.

He was also interested in archæology, and had made several interesting finds. Somerset and its old buildings, with which he came into contact during the course of his work, also greatly interested him.

Myfanwy Gadd

THE DEATH occurred on August 8 of Mrs. Myfanwy Gadd, an architect, of Top House, Rock Hill, Bromsgrove, at the age of 53.

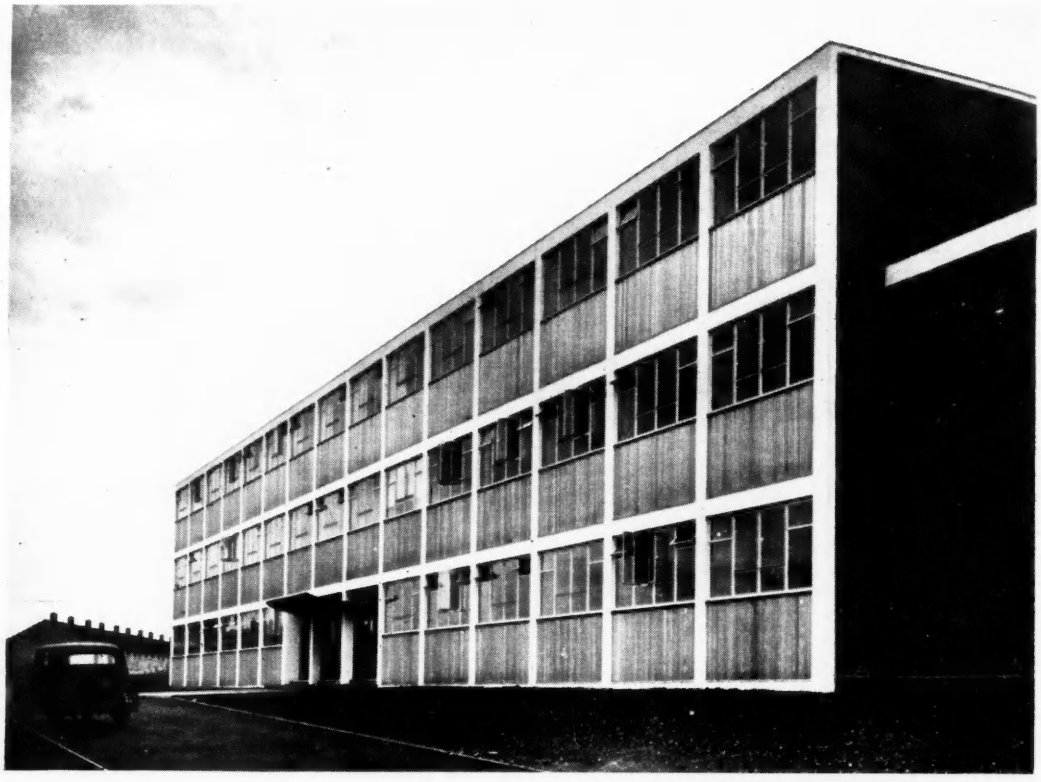
Mrs. Gadd was the daughter of the late Mr. James Shaw, a Bromsgrove architect. Educated at King Edward VI High School, Edgbaston, Birmingham, she served for some time in her father's office before taking the full course at the Birmingham School of Architecture, where she qualified.

At the beginning of the war she joined the architectural staff of Birmingham City Police, with whom she remained until hostilities ceased.

After the war Mrs. Gadd returned to Bromsgrove and was responsible for the plans of many notable buildings in the district.

C. J. Goldsmith

WE regret to announce the death, on August 14, of Mr. C. J. Goldsmith, a director of F. G. Minter, Ltd., of 4, Buckinghamgate, SW1. Mr. Goldsmith joined the company in 1897, and during his 58 years' service had been continually with the company until his death.



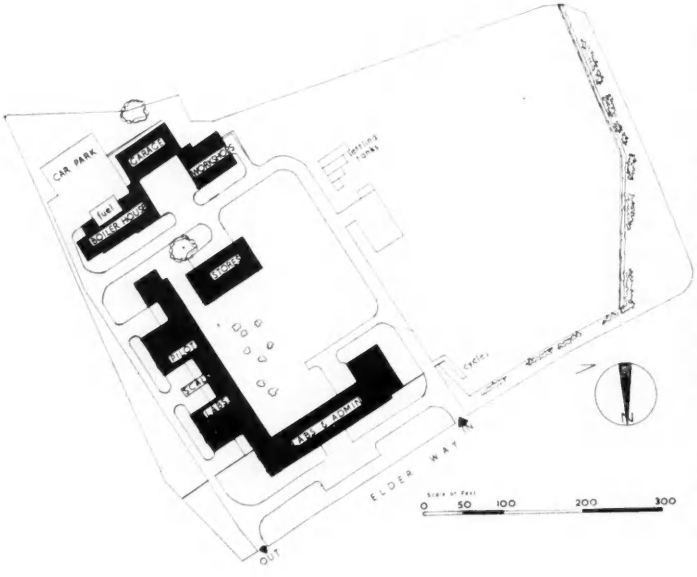
North-west elevation of main laboratory.

Water Pollution Research Laboratory, Stevenage, Herts

H. A. SNOW, ARIBA (Ministry of Works Chief Architect's Division), Architect

Engineer for Services
K. J. JARVIS, BSc, AMICE (MOW)

Builder
HARRY NEAL



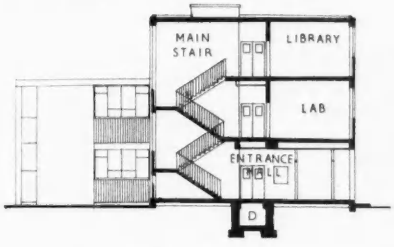
DESIGNED by and erected under the supervision of the Ministry of Works to provide new premises for the Water Pollution Division of the Department of Scientific and Industrial Research, this new laboratory is situated at Elder-way, Stevenage New Town, Herts. Building commenced in January, 1953, and the laboratory was completed in September, 1954. The approximate cost, including all site work and services, is £200,000.

The design of the buildings is simple and straightforward, additional interest being given to the elevations by the use of different types of facing brick and panel wall treatment. The main block consists of a three-storey building with small-scale laboratories on ground and first floors, and administrative quarters, library and small conference room on the second floor. Constant temperature rooms, stores and a canteen

are also accommodated on the ground floor. This block is constructed on a reinforced concrete framework, upper floors and roof being of precast prestressed concrete units. Panels to north and south walls are filled in below windows with cedar boarding backed with lightweight concrete blocks. The east wall and small west wing are built in multi-red brickwork. Laboratories generally are plastered, but walls of corridors, staircases, etc., are finished fair-faced brickwork. Laboratory benches and laboratory fittings were carried out by the Ministry's Controller of Supplies Division (contractors, Messrs. Shapland and Petter).

The single-floor east wing, which accommodates four large pilot-scale and fourteen small-scale laboratories, is built in load-bearing brickwork and roofed with precast prestressed concrete units. The four laboratories are top lit and are provided with large folding shutter doors for passage of plant and equipment. The walls of main laboratories are faced with London stock bricks and finished fair-faced internally.

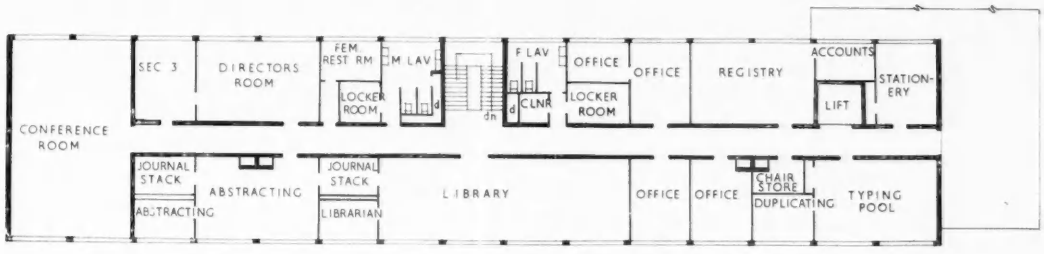
Detail of main entrance to laboratory.



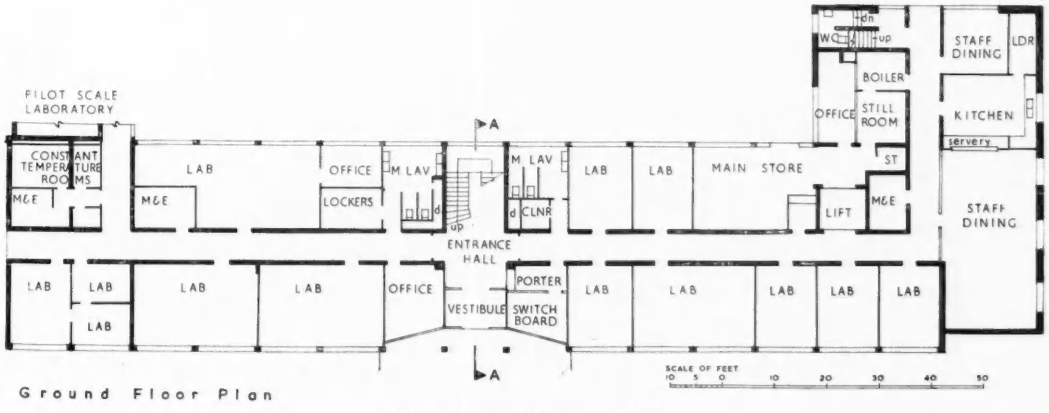
Section A-A

Section through main laboratory.

Separated from the main building are a block comprising boiler house, garage and repair shop, carpenters' and mechanics' workshops (with associated stores) and tank tower; and a main stores block. Construction is generally concrete framework with brick infilling; in some cases bitumen-covered corrugated sheeting is used as panel infilling below windows. The tank tower is faced with London stock brickwork on three sides, with asbestos cement sheet panelling on the fourth. Doors of garage, repair bay and general stores are folding steel shutters as



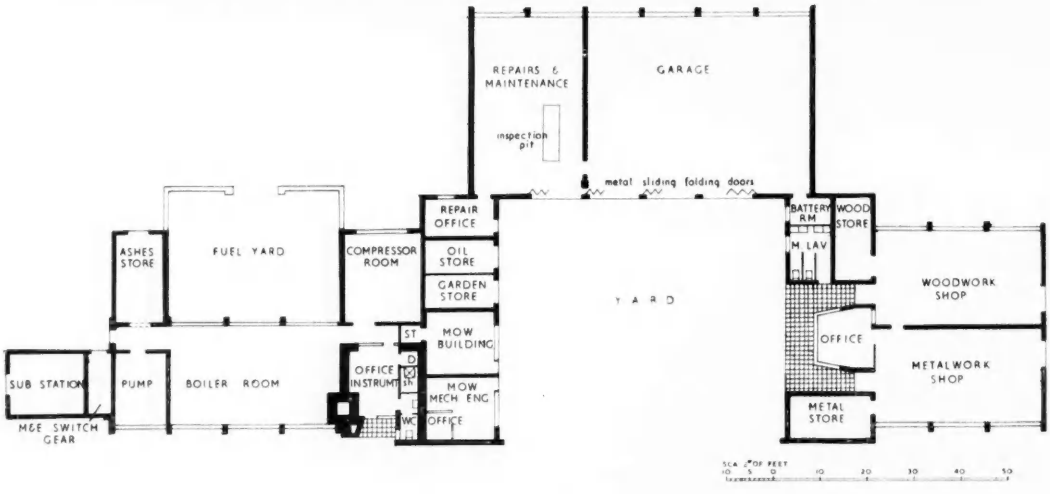
Second Floor Plan



Ground Floor Plan

Plans of main laboratory block.

North elevation of boiler house, showing tank tower. Below: Plan of boiler house, garage and workshops.



for the pilot-scale laboratories.

Roofs throughout are mineral surfaced bituminous felting. Exposed concrete framework is treated with cement paint, the cedar board panelling being left to weather naturally. Floor finishes generally to the main laboratory blocks are linoleum. The library and conference room have cork tiles to minimise noise. The floors of the main entrance hall, landings and staircase are finished in terrazzo. Emulsion paint is used internally on both plaster and fair-faced brick surfaces.

The laboratory required a series of sewage settling tanks. These were constructed below ground in reinforced concrete and are associated with a concrete platform to accommodate future filter beds, and a small control building.

SERVICES AND EQUIPMENT

MAIN LABORATORY BLOCK: Heating throughout is by a low-pressure hot-water system with radiators which, in the laboratories, are concealed behind mahogany benches with built-in convection grilles. The bench upstands incorporate gas, compressed air, water and electrical power points at frequent intervals, together with impulse points giving one-second and thirty-second impulses for use with special laboratory apparatus. The impulsing is actuated by the master clock in the messengers' room which also serves a number of slave dials throughout the buildings; a special contact is fitted to the clock mechanism to give one-second impulses.

Fume cupboards with P.V.C.-coated

hoods are installed in some of the laboratories. These are ventilated by polythene coated extract fans mounted in vertical ducts discharging through louvred housings at roof level. All ductwork is asbestos cement with acid resisting treatment. The constant temperature rooms range from 5 deg. C. to 40 deg. C. and are equipped with refrigerated cooling units and mineral insulated cable heating panels, the whole being controlled by multi-contact thermostats. A multi-channel temperature indicator with selector switch enables room temperatures to be checked from the adjacent plant room. A distillation plant capable of producing six gallons of distilled water per hour is provided by a small gas-fired boiler associated with glass stills and storage vessels.

PILOT-SCALE LABORATORIES: This single-storey building is equipped with services similar to those in the main laboratory block. In the two special laboratories where experiments on live fish are carried out, raw water is fed into special tanks at temperatures controlled between 41 deg. F. and 74 deg. F. through blending valves. Hot raw water at 100 deg. F. is provided by a calorifier in the boiler house, and a tapping off the cold raw water main is fed into these laboratories through a pressure-reducing valve.

The fish tanks are dosed with sewage at regular intervals by injectors which are operated by suitable electro-magnetic relays. These relays are momentarily energised by contacts on the impulse signal system already described. The sewage is supplied to the injectors by the sampling pump, the operation of which is remotely controlled from this laboratory. A small portion of these laboratories is engaged on experiments with radio-active substances and separate settling tanks are provided.

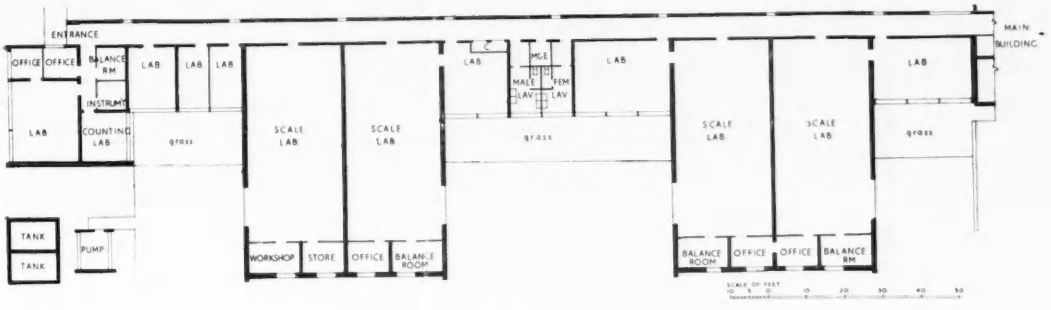
BOILER HOUSE, GARAGE AND WORKSHOP AREA: There are four low-pressure hot-water sectional boilers each having a rating of 1,000,000 B.T.U./Hr: domestic hot water and heated raw water for the fish tanks are provided through calorifiers. A separate pump room houses the heating and domestic hot-water pumps and the main modulating valve with outside temperature compensator. Also in the boiler house is the air compressor which provides the laboratories with compressed air at a pressure of 15 lbs. per sq. in. at the outlet points.

DISTRIBUTION OF SERVICES: A main service trench from the boiler house runs the whole length of the pilot-scale laboratories and the main block corridors, and contains all heating, domestic hot water, cold water, hot raw water, gas and compressed-air mains mounted on suitable supports. False ceilings are extensively used in the corridors of these two buildings and conceal the electrical services, GPO wiring and extract ducting from the fume cupboards. Fluorescent lighting fittings are mounted on the hinged trap doors which give access to the false ceiling for maintenance purposes.

Sub-contractors for the building work were: staircase balustrading, main gates and railings, Clark Hunt, Ltd.; prestressed floor and roof slabs, Concrete, Ltd.; acid resistant tiles, Prodorite; metal windows, Crittall Manufacturing, Ltd.; felt roofing, Permanite, Ltd.; Insulite glazing, Insulite, Ltd.; bituminous felt, membrane and tanking, Ruberoid Co., Ltd.; electrical, Reed and Partners, Ltd.; ventilation, constant temperature plant, Pioneer Vent and Drying Co., Ltd.; lagging, constant temperature rooms, Ardor Insulation Co., Ltd.; heating, etc. (gas, compressed air), William Freer Co., Ltd.; polythene wastes, etc., Chemical Pipe and Vessel, Ltd.; roof lights, Faulkner Greene Co., Ltd.; sliding doors, Potter Rax, Ltd.; chain link fencing, Penfold Fencing and Engineering Co., Ltd.; lightning protection, J. W. Gray and Son, Ltd.; wood-block flooring, Hollis Bros., Ltd.; terrazzo pavings, Zanelli (London), Ltd.; and landscaping, etc., Garvin Jones Nurseries, Ltd.

Sub-contractors for engineering services were: Heating, h.w.s., gas and compressed air installation, Wm. Freer, Ltd.; boilers, Hartley and Sugden; calorifiers, Rother Boiler; modulating valves and room thermostats, Rheostatic; pumps (heating and h.w.s.), Pulsometer; radiators, Ideal Boiler; unit heaters, Flexaire; bench fittings (gas, water, compressed air), Evered; air compressor, Williams and James; water storage tanks, Brown Lenox; blending valves, Walker Crosweller; gas-fired boiler, Controlled Flame Boilers; glass stills, Townson and Mercer; storage vessel, Doulton; ventilating, hoods and ductwork installation, Pioneer Ventilating and Drying Co., Ltd.

Asbestos ducting, Turners Asbestos; refrigeration plant, Lightfoot Refrigeration; multi-contact thermostats, Teddington Equipment; temperature indicator, Cambridge Instruments; c.t. room lagging, Ardor Insulation; extract fans, Woods (Colchester); electrical installation (lighting and power), Read and Partners, Ltd.; switchboards, Cantie Switches; extract fan starters, E.A.C.; air compressor starters, Brook; laboratory power take-off panels, Astral Switchgear; lighting fittings, New Era Industries, Merchant Adventurers, and Frederick Thomas; master clock, Gents; mineral insulated heating cable, Pyrotenax; effluent and sampling pumping installation, Shouksmith; effluent and sampling pumps, British La Bour; main sewage pump, Ames Crosta Mills; and lift, Evans Lifts.



Above: Plan of pilot-scale laboratory.

Left: East elevation.

WATER POLLUTION RESEARCH LABORATORY, STEVENAGE, HERTS

Front elevation to Great West-road. Below: Reception area of the office floors.

OFFICES AND FACTORY EXTENSIONS AT BRENTFORD

Architects
ERIC FIRMIN & PARTNERS

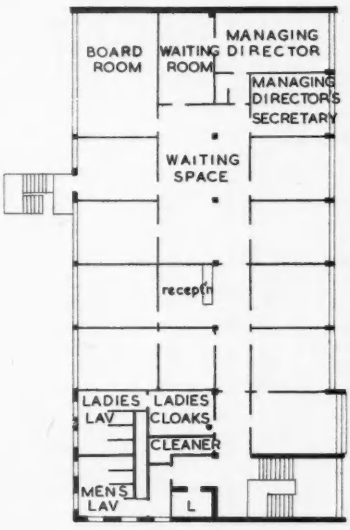
Consulting Engineers
W. M. HOWSON & PARTNERS

Quantity Surveyors
STANLEY GRIFFITH & PARTNERS

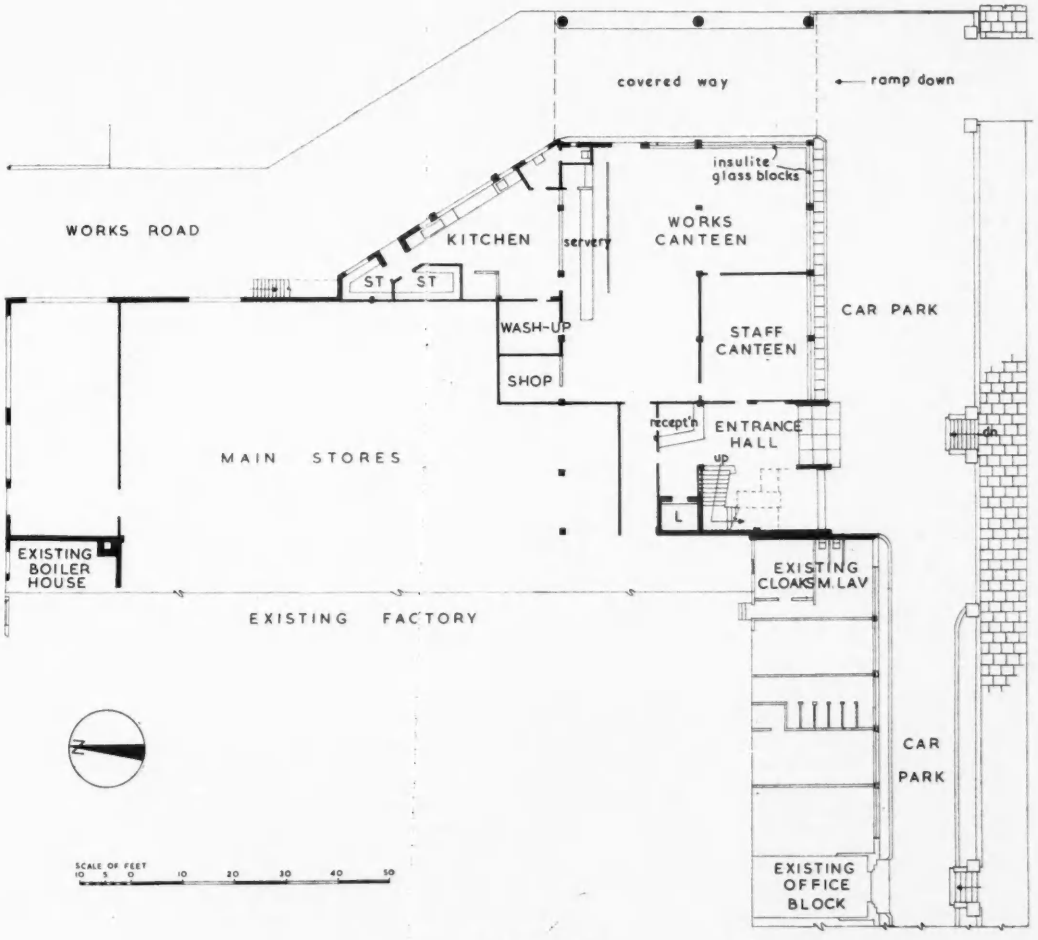
Builders
KYLE, STEWART (CONTRACTORS), LTD.

THIS scheme for Beecham Foods, Ltd., was carried out in three stages, the first two being extensions of the adjacent Lucozade factory and the third comprising the completion of the whole new company headquarters. The office block is completely steel-framed, the steelwork being encased in concrete with reinforced concrete hollow tile floors and reinforced concrete main staircase. The external walls are all in cavity brickwork construction, with an inner skin of Leca blocks to the front and rear elevations. The executive suite has patent demountable cellular plastic partitioning and wall panelling faced with French walnut veneers to door height with a clerestory of reeded glass above to provide borrowed light to the central internal waiting area. Following is a list of nominated sub-contractors :—

G. and S. Allgood, ironmongery; Atlas Sprinkler Co., sprinklers; Art Metal Construction Co., metal partitions; C. and S. Construction Co., Ltd., structural steelwork; Campbell Horne and Co., Ltd., external rendering; Diespeker and Co., Ltd., reinforced concrete work and terrazzo finishings; E. J. Elgood, Ltd., cork flooring; James Farquharson and Sons, Ltd., kitchen installation; General Constructional and Eng. Co., Ltd., fire escape and external railings; Henry Hope and Sons, Ltd., metal windows, patent glazing and bronze revolving door unit; Holoplast, Ltd., partitioning to executive suite; Insulatall Services, Ltd., roof underlining and suspended ceilings; Johnson Floor Co., Ltd., "Monofax" granolithic flooring; Lenscrete, Ltd., glass block masonry; A. G. Manly and Co., heating; J. Nash (Sheet Metal Works), Ltd., fresh air trunking; The National Flooring Co., Ltd., Accotile flooring; Osgood and Co., Ltd., glazed faience wall tiling; C. H. Pearce and Co., electrical installation; Peerless Fence and Products, Ltd., fencing; Robbs Cement Enamel Finishes, Ltd., "Sandtex" finish to flank walls; Rock Asphalte Co., Ltd., asphalt roofs; E. H. Smith (London), Ltd., asbestos cement roofing; Stitson White and Co., Ltd., plumbing installation and sanitary fittings; Venesta, Ltd., metal faced doors.



Third-floor plan.



Ground-floor plan.

OFFICES AND FACTORY EXTENSIONS AT BRENTFORD

News of the Week

TALL BLOCKS FOR LEAMINGTON

LEAMINGTON Town Council has decided to build an 11-storey block of council flats which will rise to a height of 112 ft., in a clearance area in Brunswick-street, near the town centre. Other multi-storey flats are to be built in an attempt to reduce the housing list, which now contains 1,600 applicants.

"We appreciate that there may be complaints that such blocks are not in keeping with Leamington's Regency architecture, but they are designed to blend with the future development of the areas in which they will be situated," Councillor E. Lucas, Chairman of the Housing Committee said. "An acute shortage of land within the borough boundaries makes it essential to build upwards as well as outwards. We feel it our duty to conform to modern requirements, rather than be shackled by the past."

Mr. R. S. Jones, ARIBA, who has designed the flats, said their appearance would be "conservative rather than contemporary," so that they would not clash with the Regency surroundings.

MUNICIPAL APPOINTMENTS

A MOVE to check corporation officials who change their posts too quickly is being made by the Association of Municipal Corporations. The Association have asked their 430 member Councils throughout the country to limit new appointments, save in special circumstances, to officials who have been more than six months with their employing authority.

SURVEY OFFICERS' CONFERENCE

LORD LLOYD, Parliamentary Under-Secretary of State for the Colonies, opened the Commonwealth Survey Officers' Conference, which is being held in the Department of Geography, Downing Place, Cambridge, until Wednesday, August 24.

The 250 delegates include contingents from Commonwealth and Colonial territories, observers from the USA, Belgium, Holland and the Sudan, and representatives from many UK Government Departments, particularly the Directorate of Colonial Surveys, Ordnance Survey Office, Directorate of Military Survey, Ministry of Supply, HM Land Registry, Admiralty and National Physical Laboratory.

Eighteen British manufacturers have organised an exhibition of survey instruments and equipment. There is also an exhibition of photographs and mapping by various survey firms.

Among the subjects covered in the 26 papers are "Training of a Surveyor," "Radio Aids to Surveying," "Aerial Photography and Overseas Air Survey," "The Application of Electro-Mechanical Computing to the Work of the Ordnance Survey," "Electronic Aids to Hydrographic Surveying," and aspects of survey work in Southern Rhodesia, Nigeria, Uganda, North Borneo and Canada.

ITALIAN CHURCH EXHIBITION

A NATIONAL CONGRESS on Church Architecture will be held in Bologna from September 23-25, on the initiative of Cardinal Giacomo Lercaro, the Archbishop of Bologna, to which all the Italian architects and engineers are invited. There will be on show a documentary exhibition of post-war Italian church architecture together with an exhibition of modern church furnishings in Europe (limited to chalices and chasubles). A national competition is being held for a monograph on the subject: "The Church, man and collectivity in the structure of their residences: space and social relations." The office of the exhibition committee (whose chairman is Dr. Ing Pierluigi Giordani) is: via Altabella 6, Bologna.

RISES IN LABOUR COSTS

BETWEEN 1948 and 1954 labour costs per unit of output in the British economy as a whole rose by about 27 per cent., and in the building and contracting industry by 32 per cent., according to an article in the August issue of the Treasury's *Bulletin for Industry*. Details of the position in building and contracting for each of the years 1948 to 1954 in regard to output; wages and salaries; and wages and salaries per unit of output are set out below.

LABOUR COSTS IN BUILDING AND CONTRACTING

Year	Output	Wages and salaries	Wages and salaries per unit of output
1948	100	100	100
1949	105	107	102
1950	105	109	104
1951	101	118	117
1952	103	125	121
1953	110	136	124
1954	111	147	132

HIGHER PRODUCTIVITY

BETTER WAYS. *Nineteen paths to Higher Productivity* is the title of a well-produced book just issued by the British Productivity Council (21, Tothill-street, London, SW1, price 2s. 6d.). It consists of nineteen articles, many of them illustrated by diagrams and photographs, explaining in some detail the technique of increasing productivity in various aspects and phases of industry. Building is not dealt with, but some of the contributions relate to allied industries—paintworks, electrical, structural and mechanical engineering.

GOVERNMENT OFFICE SCHEME

THE Ministry of Housing and Local Government have given permission to Manchester Corporation to compulsorily purchase land in the city on which it is proposed to build a "little Whitehall."

Although the corporation is purchasing the land, the Ministry of Works will be responsible for the building of the £800,000 group of Government offices, one of which will rise to 18 storeys. It will be the highest office building in the city and will be occupied by the Inland Revenue.

The scheme also includes a six-storey block for the Ministry of Labour and a three-storey block for the Ministry of Pensions. When the offices are built, 1,300 civil servants now working in rented offices in Manchester, Salford and Stretford, will be transferred there.

FEODORA GLEICHEN AWARD

THE Feodora Gleichen award for 1955, which is administered by the Royal Society of British Sculptors, has been made to Miss Brenda Long, of Wigan, for photographs of three works. The award, which is for women sculptors who have completed their training, was founded by the relatives of the late Countess Feodora Gleichen.

NEW APPOINTMENTS

THE appointment of Mr. E. Berry Webber, FRIBA, of London, as architect for the proposed West Bromwich municipal buildings at Highfields is being recommended to the town council. He is designing the Civic Centre at Solihull.

MR. L. N. FOSTER, assistant planning adviser, Lancashire, has been appointed deputy county planning adviser, Essex, in succession to Mr. L. A. Leaver, promoted county planning adviser.

MR. R. C. CLARK, AMTPI, chief assistant planning officer, South Shields, has been appointed deputy town planning officer, Hull, in succession to Mr. D. F. Offord, who has been appointed a Ministry planning officer.

MR. GWILYM BELLIS, FRIBA, has been appointed deputy county architect to Denbighshire County Council. Mr. Bellis, who has been in the service of the council for 24 years, is at present principal assistant to the county architect.

PROFESSIONAL ANNOUNCEMENTS

MR. HOWARD V. LOBB, CBE, FRIBA, AIStructE, announces that MR. JOHN RATCLIFF, OBE, FRIBA, AMTPI, has joined him in practice. The name of the firm will remain as Messrs. Howard V. Lobb & Partners.

MR. LEONARD FLETCHER, ARICS, chartered quantity surveyor, has resigned his position with Messrs. Vallance and Westwick, of Mansfield and Sheffield, and has commenced his own practice at North Church-street, Bakewell, Derbyshire.

MESSRS. H. R. HEASMAN & PARTNERS, chartered quantity surveyors, have moved their office to Temple Bar Chambers, 227, Strand, London, WC2 (Tele.: Fleet Street 0539), where they will be pleased to receive trade catalogues.

MR. W. G. ROBATHAN, ARICS, AIArb., chartered quantity surveyor, has commenced in private practice at "Stapledene," Kineton-rd., Wellesbourne, Warwicks, pending accommodation becoming available in Stratford-upon-Avon. He will be pleased to receive trade catalogues.

MESSRS. ERNEST J. THOMAS, JOLLY AND GRANT announce that they have vacated their offices in Coronation House and moved to larger premises at 26, Kent-rd., Southsea.

FROM "THE BUILDER" OF 1855

Saturday, August 18, 1855

STAINING-LANE, CITY.—As a constant reader I have been much pleased, from time to time, with your exposure of buildings being spoilt from the niggardliness of the owners, and have often thought, as I walk the streets of London, how a little attention on the part of the City authorities would smooth down those ugly projections and zigzags in the lines of streets; but it is unpardonable when our wealthy companies rebuild and still keep to the old landmarks, just to save a few inches of room. . . .—A COCKNEY.

"ON THE FRONTIERS OF KNOWLEDGE"

The Contribution of Architectural Research to the Achievement of Imaginative Design

MR. RICHARD LLEWELYN DAVIES, ARIBA, in a recent broadcast talk in the BBC's "Prospect" series in the Third Programme, entitled "On the Frontiers of Knowledge," attempted to show how the architect may regain his freedom to design imaginatively despite the enormous complexity of many modern buildings, by using the new knowledge that architectural research is making available. He said:—

A few months ago I was in America looking at architecture and talking to architects. I am interested in hospitals, and one evening I asked some of my friends in New York where I could see a hospital which was not merely technically efficient—most new American hospitals are—but was also a really fine piece of architecture. With one accord they said there was no such thing: pressed, they said that hospitals, and indeed many other sorts of buildings, were now so complex that architects were overwhelmed by a mass of specialised technical requirements to a point where creative design becomes impossible.

In Chicago, I saw the work of Mies Van der Rohe, tall blocks of flats beside Lake Michigan, and the new Illinois Institute of Technology. It is hard to describe the tremendous impact these buildings make—among the work I saw in the United States they stand alone—with calm beauty, immense authority and yet completely unassertive. I tried to discover by what means Mies Van der Rohe had succeeded where so many architects had failed, bogged down by the complexity of their task. I found that his work depends, in great part, on a rejection of all planning to meet precise needs. His buildings simply provide undifferentiated space, which their users can employ as they will, or as best they can.

This brushing aside of the functional requirements has freed Mies Van der Rohe, and enabled him to make his very great personal contribution to architecture—a revelation of the exquisite architectural poetry which is inherent in modern construction—but it does not solve the general problem which architects must face, both in America and here: How are we to master the mass of knowledge—continually increasing in breadth and complexity—needed to design a building today? There are several sides to this problem. How far is the knowledge we need already available? Where it is lacking, how are we to pursue it? What are the channels by which knowledge can pass into practice? Finally, supposing the knowledge is all there, and fully accessible, how can we emerge on top of it, and use it as the raw material for creative design?

NEW STRUCTURAL FORMS

Knowledge of structure and materials is already extensive, and we have been aware for some time of the need to absorb it into practice and into teaching. Indeed, we sometimes over-stress the dependence of design on structure. In much contemporary work new structural forms and new materials are seized on with an almost masochistic eagerness as a dominating factor in design, particularly those with a strong formal character, such as the shell concrete wall, or the curtain wall. The means to building constitute a major element in design, but this is only half the story. That modern design leans so heavily on the expression of structure and material is, I think, because we know so little of the other half—the purposes of building.

Today, it is very often true that neither the architect nor the people who commission a building have a clear picture of what it has to do. The architect's contribution is thus reduced to little more than drawing a pencil line round a list of rooms. He may leave it at that, but the result will then, most certainly, not be architecture. If he attempts to reach some formal coherence in design he will be driven, in the absence of real understanding of the needs of the building, to impose a wilful or artificial unity.

THE PIONEERS

Like Mies Van der Rohe, Le Corbusier and other great architects have made their contribution by escaping, in various ways, from this dilemma. Le Corbusier designs round his own, intuitive concept of how people ought to live in cities, and he imposes this concept of living on the occupants of his Marseilles block. He is great enough and bold enough to do this, but, not unnaturally, other architects have found it hard to follow him. He and other pioneers have shown us, by an imaginative projection, where architecture is going. To get there *we* must understand what the purposes of present-day building really are.

Architects have not always had to face this difficulty. Often, in the past, they worked within a traditional culture, which kept pace with changes in society and the development of technique. Today, change is too rapid for tradition to keep pace. An airport, or a laboratory, must house and express a life for which there is no precedent. The design of a new school, or a new hospital, should reflect new thinking in education and medicine, not the method and habits of the past. To understand present-day needs, we must look directly at what goes on in buildings, using appropriate research methods to do so.

But the conditions of normal practice do not permit an individual architect to make an intensive study of each building problem that comes his way. He needs knowledge which can only be arrived at by research, but that research must be the task of special bodies. Such bodies have lately been set up, both here and in the United States. In this country, there are today three or four full-time research teams engaged on the study of special buildings, hospitals, schools, laboratories and farms. It is already possible to see, in outline, what the impact of this work may be on architecture.

First, it is significant that all the research now in progresss has been set up, and maintained, by Ministries, Research Councils, Foundations and similar bodies, directly or indirectly the users of buildings.

Serious, organised research is expensive. The fact that responsible bodies will now finance it means that they, and the clients they represent, have found by hard experience that existing knowledge is inadequate to produce the architecture they need. They have realised that satisfactory buildings cannot be had, if the users themselves do not know what they want.

PATTERN OF RESEARCH

The pattern of work developed by the research teams is one of simultaneous study by a group of people, each with different training and experience. For example, the team making a study of hospital design at the Nuffield Foundation included a historian, a sociologist, a statistician, a doctor and a nurse, working with architects and scientists. As an example, I can take the hospital ward—one of the subjects studied by the team I have mentioned. One of our first tasks was to discover what proportion of the patients, under present-day conditions, are bedfast, and what proportion able to get up and do a certain amount for themselves. A survey, conducted by the doctor, showed that over two-thirds of the patients are often able to move about. Indeed it is better from a medical point of view if they do. This has obvious repercussions on planning, which until recently has been based on the assumption that all the patients would be in bed all of the time.

Another survey, made by the doctor, established how many single rooms or cubicles will be needed for patients, who are very ill, or should be segregated for other reasons. We also looked at the organisation, and the detailed daily tasks of the ward nurses. We traced the pattern of movement of a nurse about the ward, by winding thread on pins stuck into a plan. From this we could see how design might minimise her walking; a nurse, we discovered, walks 2½ miles a day, just moving to and fro within the ward. We also made a film of nursing, to see how much space was needed for particular jobs, using a cast of the fattest possible nurses, to be on the safe side. Working with physicists at the Building Research Station, we built a model of a ward to get information about daylighting, window design, and the use of colour. With their help, we also made records of the noise in hospitals—which is often terrific—and looked for ways, by planning and construction, to cut down the amount of noise reaching patients.

HISTORICAL APPROACH

I mentioned that a historian took part in these studies. I believe that an historical approach is essential to throw light on the intersection, between architecture and our patterns of life and organisation. Architecture may at one stage express a current social pattern, at

another, owing to the long life of buildings, it may tend to freeze our thinking as to how we can best live and work. This point was strikingly brought out in our study into ward planning. We found in present-day hospitals a clear-cut pattern of nursing work and organisation. It would, however, have been quite wrong to accept this pattern as a guide to design—for historical study showed clearly that it had come into being to fit the architecture of the famous Florence Nightingale ward. It became firmly established during the century when wards were nearly all on this plan, and persisted even after this was superseded.

Such studies, as I have been describing, each explore a different aspect of one design problem. They represent the first analytical stage in research, and each, by itself, means little. The next step is to put them together and see what they add up to—and this is a very exciting experience for an architect. A problem, like ward design, for which rather dreary, stereotyped solutions used to seem inevitable, is suddenly illuminated by new knowledge, and seen as full of rich and varied architectural possibilities. Some teams have gone on to explore these possibilities by designing experimental buildings, to demonstrate and test the results of research. Experimental schools have been built at Wokingham and at Coventry, and experimental hospital buildings at Greenock and in the new town of Corby. These buildings are not to be thought of as ideals, or standards; they are *examples* of the sort of architecture that may follow research. Like a prototype aeroplane, they enable new designs to be tested in actual use, before they are accepted into practice.

DESIGN OF SCHOOLS

Much of the research now in progress has not yet had time to filter through into practice. I think school building is an exception. Many new schools, built since the war, are delightful examples of modern architecture, light, gay, full of colour, expressing perfectly the modern concept of teaching children.

The architecture of these schools was greatly influenced by the work of research groups, and it has been very striking to see how rapidly this influence has spread, and how quickly the results of research and experiment have been assimilated by architects all over the country.

The most direct channel of communication is by publication. There have been the bulletins issued by the Ministry of Education, which are based on the work done by the Ministry's research teams. A less direct, but extremely effective channel has been the demonstration of research results in the form of experimental school buildings. Faced with an unfamiliar problem, an architect will nearly always seek out the best recent work, go and see it, and learn an enormous amount by doing so. Demonstration in actual building is therefore the most rapid method of communication between research and practice. A slower process, but very important in the long run, is the movement of men from the research teams into practice and teaching. This is only just beginning, but it will in time have its effect on our thinking, and on our methods of work.

Thanks to the spread of knowledge, school design is no longer a matter for a few specialist architects, but is understood by the profession as a whole. This may perhaps point to a way out from the dilemma of specialisation, which faces architecture, as it does other professions and disciplines. So long as we think in terms of each architect himself building up a private stock of knowledge, specialisation must follow inevitably from the complexity of modern building problems. If, however, we see the collection of knowledge, research and experiment as the task of specialist bodies, then perhaps the practice of architecture need not itself become specialised.

EXAMPLE OF MEDICINE

The profession which has been most successful in combining *specialised* knowledge with *general* practice is medicine. The majority of doctors are still general practitioners and it is important that this should be so, for the general practitioner alone can look at the patient as a whole human being, and take a balanced view of his health problems. Nevertheless, almost the whole body of medical knowledge is inevitably specialised, and the task of developing and extending this knowledge falls to the specialist doctors, working and researching in hospitals. The medical profession is so organised that teaching, research and specialisation go hand in hand, and doctors are trained by specialists in the teaching hospitals, although the bulk of them will eventually become general practitioners.

In medicine, research and specialisation function in the right places—on the frontiers of knowledge. The knowledge gained in research is constantly fed back into practice, and it is significant that what is the work of a specialist to-day is very often applied in general practice to-morrow. If architectural practice and research develop along somewhat similar lines, as I think they will, there are some important implications for its teaching.

The most important is that we should recognise that architecture is a social art, dependent on contact with many arts and sciences, and not only with technology. We should train young architects to understand the great sweep of knowledge necessary for the practice of our art, and show them how to acquire and use what they need, when they need it. We should re-establish, but in a somewhat new sense, the Renaissance ideal—of the architect as *Homo Universale*. He can no longer carry in his own brain the whole of contemporary knowledge and culture, but he can know its extent. We should, therefore, keep undergraduate training broad, and resist the temptation to introduce more and more courses in the vain hope of catching up, at all points, with the expanding horizon of knowledge. Besides training all-round architects, we shall also have to meet a demand for men with more advanced and specialised training and experience. We already need such men in our growing research organisations and in teaching, and often cannot find them. For this we shall need post-graduate training, which exists in most other professions, but with us is only just beginning. In architecture, as in other subjects, post-graduate work is naturally combined with research and it is at this level that advanced specialised study is appropriate.

I have been trying to answer some of the questions I posed earlier, as to how we can pursue the knowledge we need, and transmit it into practice. The last, and most important question still remains: given the knowledge, shall we be able to use it as a means to imaginative design? I have no doubt that we shall. Inadequate, half-baked knowledge limits the imagination; real understanding sets it free.

A new and very beautiful concert hall just completed at Caracas in Venezuela symbolises for me the relationship of knowledge to freedom in design. It is of simple shape, with a plain vaulted ceiling, plastered and painted white. Floating in space below the ceiling are a number of objects, rather like clouds, some higher, some lower, of various shapes and colours, creating against the white background an exquisite play of form and colour.

A few years ago, our limited knowledge of acoustics would have made such free design impossible. To ensure good hearing in a large hall, designers would have had to accept very stringent limitations, affecting the overall shape of the room, the surface form of walls and ceiling, and even the materials used.

The architect of the hall at Caracas drew on the experience of a team of architects and physicists from Massachusetts Institute of Technology, where research has widened understanding of architectural acoustics, to a point where any particular problem can be solved in many ways. Indeed, so wide was the freedom available, that the artist, Alexander Calder, could be called in to design the clouds, which provide acoustic control, as a piece of sculpture. Here, on a foundation of knowledge, free creative design has been achieved. This is the pattern of architecture. As Barbaro, the Italian Humanist, wrote in a commentary on Vitruvius:

"The Artist works first in the intellect, and conceives in the mind, he then symbolises the exterior matter after the interior image, particularly in Architecture."

BOOKS RECEIVED

CONCISE PRACTICAL SURVEYING. By William Curtiss, AMIStructE, and Robert F. Lane, ARICS. (London: English Universities Press, Ltd.) Price 15s.

CIVIL ENGINEERING DESIGN: NOTES AND SKETCHES. By T. W. Barber, MICE. Fourth edition, revised and enlarged by R. Hammond, ACGI, AMICE. (London: The Technical Press, Ltd.). Price 25s.

NEW HORIZONS IN COLOUR. By Faber Birren. Pp. 200. Illustrated. (London: Chapman and Hall.) Price £4.

⁂ *Books reviewed in these columns may be obtained on application to the Book Dept., "The Builder," 4, Catherine-street. Aldwych, WC2. Cash (which should include* 1*s. to cover postage and packing) should accompany the order.*

MODERNISATION OF OLD DWELLINGS

LCC Millbank Estate Scheme

EARLY in 1951 the London County Council decided that it could at last make a start on the heavy task of modernising some of its oldest dwellings, particularly 6,000 flats which it had built in the 20 years before the first World War. Such flats were known to be generally sound structurally, but substandard in amenities. Eleven blocks of flats in various parts of London were chosen for modernisation as a first instalment of a formidable programme. Gainsborough Buildings, a five-storey block on the Millbank Estate, Westminster, was selected for the first conversion and this has now been completed and is the subject of the notes which follow. Work is in progress on a second block on that estate and on Taplow Buildings in Bethnal Green; and proposals are in hand for the conversion of blocks at the Boundary Estate, Shoreditch, and the Bourne Estate, Holborn.

The Millbank Estate is situated to the rear of the Tate Gallery and the first block, Hogarth Buildings, was completed in 1899; 16 additional blocks were completed by 1902, providing in all 884 flats.

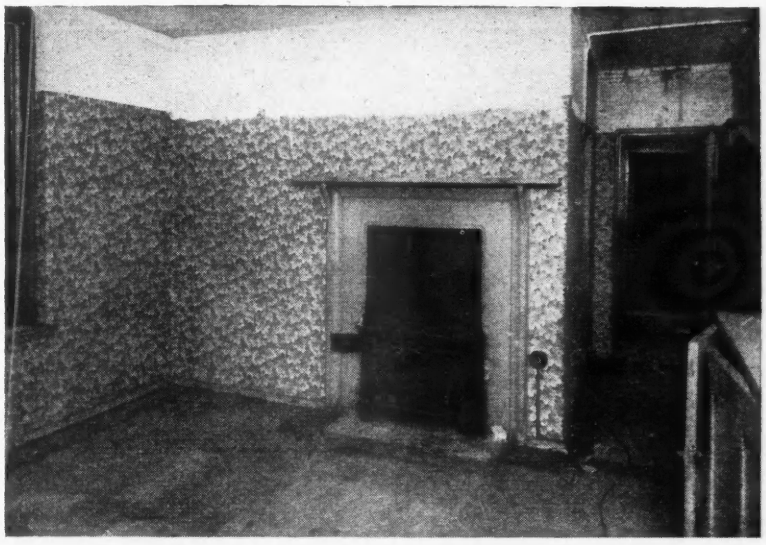
CONTRASTING STANDARDS

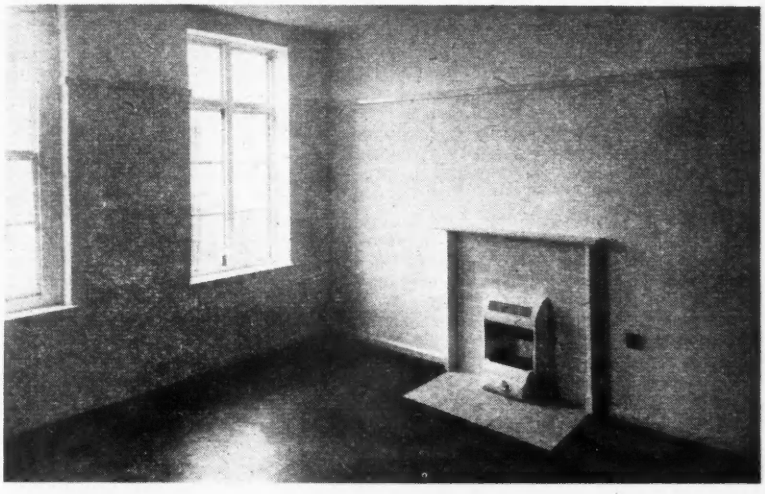
Before modernisation, Gainsborough Buildings contained 20 three-room and 20 two-room flats, the upper floors being served by two common staircases adequately lighted and ventilated. While the flats were self-contained some dividing partitions between flats were only 3 in. thick. The internal lobbies were unventilated and all bedrooms were entered off living-rooms.

There were no kitchens as such; originally, cooking was done on solid fuel ranges in the living-rooms but, in some cases, these had at varying times been replaced by modern tiled surrounds, and open fires and gas or electric cookers had been provided in sculleries. The sculleries were very small and had inadequate light and ventilation. The wc's were approached through the sculleries via small open areas. There were no bathrooms and all water supplies including drinking water were drawn from storage tanks.

There was no hot water supply and the fireplaces, sinks, food cupboards and fittings generally were inadequate and out of date. On the credit side, however, the building was found to be structurally very sound, having been originally soundly built and kept in a good state of maintenance and repair and, like all the other blocks on the estate, the fabric still has a long and useful life. Generally, the floor surface was wood, with grano flooring in sculleries and wc's the structural floors being of the filler joist type.

It should not be assumed from this description that when built these flats were substandard by comparison with other contemporary housing. Rather is the nature and extent of the work of conversion and improvement an interesting contrast between accepted housing standards now and 50 years ago.





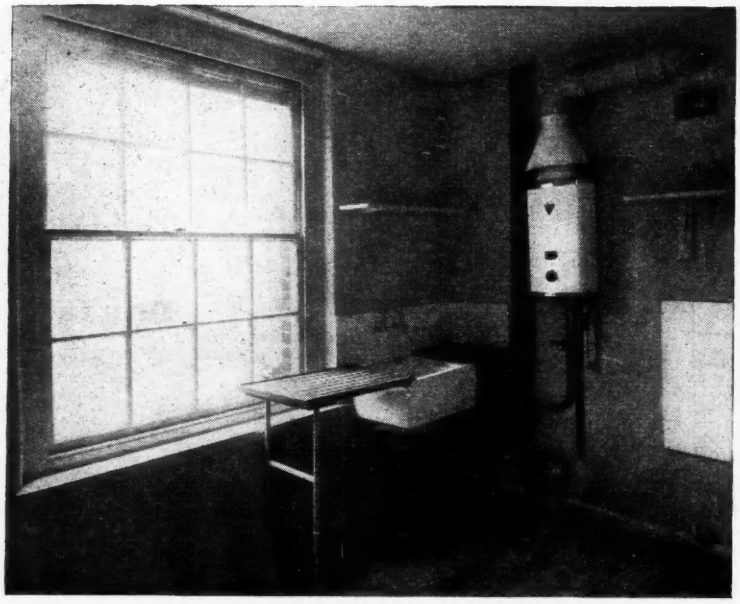
A typical living-room before and after conversion.

As Exchequer assistance under Section 15 of the Housing Act, 1949, was to be sought, the scheme of modernisation aimed at providing all the amenities listed by the Act as prerequisites to a grant. It was apparent at the outset that it would not be possible to achieve the required standards without reducing the existing number of flats and rooms. In fact the scheme has provided 30 flats from the original 40. The conversion programme was therefore phased to run concurrently with another programme, the substitution of heated drying cabinets in a small way for existing unheated drying rooms which had been provided in certain blocks built in the inter war years. The large, unheated drying rooms thus released were converted into additional flats, the gain of accommodation in this respect serving to offset the loss arising from the improvement of old properties.

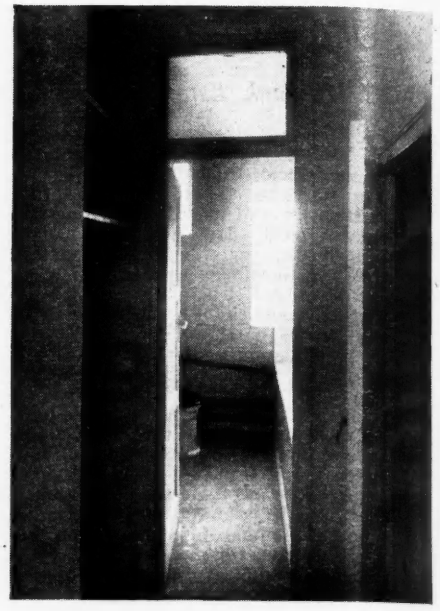
The work at Gainsborough Buildings involved demolishing many existing partitions and erecting new ones to create separate and satisfactory kitchens and bathrooms, and the provision of new sinks, draining boards, dressers, cupboards, wc suites, baths, lavatory basins, modern living-room fireplaces and gas water heaters. It was necessary to renew all internal plumbing, including storage tanks, and the existing two pipe soil system was changed to the one pipe internal system.

Electric lighting and power points were installed and alternative facilities for cooking by gas or electricity were provided. Generally, new floor surfacing of thermoplastic tiles was provided in living-rooms and bathrooms. Some additional windows on one face of the building were necessary and these were constructed and fitted to match the existing joinery and brickwork.

Space heating of the living-rooms is effected by means of modern open fires incorporating convector jackets and grills for the provision of additional heat by convection, as the layout of the flats did not lend itself to the use of back boilers. Domestic hot water is provided by multi-point gas water heaters supplying sinks, baths, and lavatory basins. It



A converted kitchen.



New cupboards and restyled bathroom.

is, however, proposed to use back boiler installations wherever possible in future schemes, and also where possible to provide dust chutes.

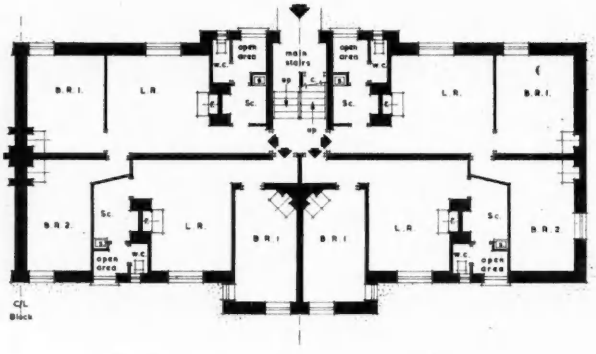
Repairs to roof and mansard slating, chimney stacks, gutters and down pipes, joinery and plaster were executed and the whole block painted internally and externally. Walls and ceilings were redecorated throughout, a matt finish emulsion paint being used for the walls, with ceilings distempered off white and woodwork painted with gloss paint. Particular attention was given to the colour scheme of both new flats and staircases by the imaginative use of Archrome colours selected from the Munsell notation.

DIRECT LABOUR SCHEME

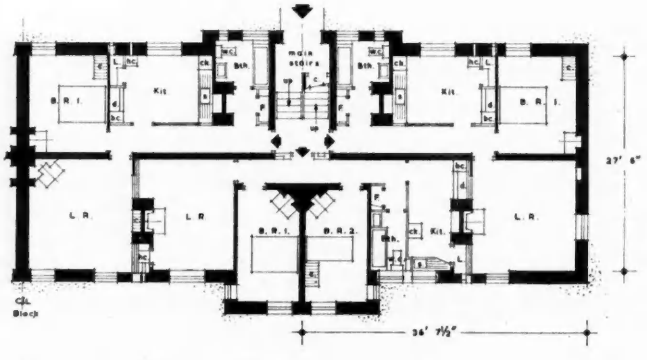
The work took 49 weeks in all and was executed by the Works Division of the then Housing and Valuation Department with the direct employment of labour, except for thermoplastic flooring which was provided and laid by a specialist flooring contractor.

The total cost of the work was £21,879, an average of £729 per new flat provided.

The work was originally conceived by the former Director of Housing and Valuer, Cyril H. Walker, CBE, FRIBA, FRICS, and carried out under the general supervision of Mr. C. W. Henderson, AMICE, officer in charge of the Works Division. Mr. H. B. Hutchinson, LRIBA, was in charge of the execution of the work, and was associated with Mr. E. G. Howkins, LRIBA, in the preparation of the scheme.



EXISTING GROUND FLOOR PLAN
HALF BLOCK : FOUR FLATS



GROUND FLOOR CONVERSION
HALF BLOCK : THREE FLATS

MODERNISATION OF OLD LCC DWELLINGS

OPPORTUNITIES FOR SMALL TOWNS

A Talk at the Housing Centre Conference

THE way in which small towns can make a contribution towards the national problem of congestion and overspill was pointed out by MR. B. BELL, OBE, FRIBA, MTPI, County Planning Officer for Lincoln—Parts of Kesteven, in a paper read at the Housing Centre annual conference in London on July 6. The paper was entitled "Opportunities for Small Towns" and we give the following extracts:—

It is because they know that they have opportunities as areas which could receive the overspill from the big towns that the small towns are interested in the extent to which the Town Development Act is likely to be implemented. There are signs that the central government may take an increasing interest in the implementation of its provisions, but I am sure that it would be unrealistic for us to believe that this Act can be applied within the next few years on a scale sufficiently large to affect a great many small towns which could nevertheless play a useful part in the accommodation of excess population from congested areas.

Earlier in this paper I mentioned the desire of a number of businesses and industries to leave the central areas of big towns and to seek more room elsewhere. Only yesterday my post contained evidence of the desire on the part of an industry to move out into a country town. A firm of London estate agents wrote to me to say that a client of theirs wanted to find a 20-acre site for a certain form of industrial development in my part of England. Could I advise where such a site was available for immediate purchase? The site must be reasonably easy to develop, and a good water supply and sewage disposal facilities were essential.

AVAILABILITY OF LAND

Now in cases like this I cannot be of much use if I merely advise the potential industrial developer where land is allocated in a development plan for industry. I must know that the land is available at a reasonable cost, and if the services are not actually on the spot, I must know that the local authority is sufficiently vigorous to be able and willing to bring them to the site. Where the potential new industry is as large as that proposed there is only one place in my county to which I can direct their attention with confidence. That is the Borough of Grantham, where the Council has been sufficiently active to acquire some land itself for re-sale to industrial developers, and where steps are being taken by purchase to ensure that other good sites are available.

It is in this voluntary movement of means of employment that I see a chance for many small towns to acquire new functions which in turn might attract people out of the over-populated centres. I am not sure, however, that the local authorities which want to attract new forms of employment into their areas are doing everything they can to assist in the process. From the inquiries which I sometimes get, I feel that there is a need for some form of centralised bureau of information which could advise industrialists of the towns which need more industrial development, and the facilities which those towns can offer. The industrialist is particularly interested to know where sites are available for immediate purchase, the extent to which services are at the site or could readily be supplied.

Personally I think that many of the towns should be encouraged to own at least a small amount of land for industry. I think it quite useless for local authorities to pass a lot of pious resolutions about attracting industry unless they are prepared to make good sites available either by co-operation with the landowners or by acquisition themselves. To what extent does the prosperity of small towns lie in their own ability to attract industries, rather than in their submission to major operations under such statutes as the New Towns Act, 1946, or the Town Development Act of 1952?

SMALL INDUSTRIAL TOWNS

In this paper so far I have been writing mainly about the non-industrial country towns, or those where the proportion of industrial activity is comparatively small. There are, however, many small towns which over the last century or so have acquired considerable industrial functions, which possess highly skilled populations, and which are advantageously placed for further expansion. If the Town Development Act is to be put into operation on a wider basis, it is possible that the enlargement of some of these could make a most useful contribution towards the relief of congestion in the major urban centres, provided the money for the initial capital outlay on such things as services, site preparation for industry, and housing, can be made available in a way which will not place an unfair burden on the present ratepayers.

When a town develops gradually, or even rapidly, as a result of private initiative in both industry and housing, the problem does not become so acute. Before the last war it could almost be said that every time a local factory added another bay, the speculative builders put up another street of houses for sale to the incoming population. Whatever one thinks about the way speculative residential building was carried on during the inter-war period the growth of a town in the way I have just mentioned did not lead to excessive hardships for the ratepayers. Compared with methods of state action under such statutes as the New Towns Act and the Town Development Act nothing like the large sums of public money had to be raised and interest charges paid before the new development was revenue producing. If, however, the state is to take an active part in solving the problems of congestion and overspill, because these have become problems which can no longer be left entirely to private enterprise to deal with, then obviously the present inhabitants of the small towns will want to make a careful study of the cost to themselves before they willingly submit to the process.

So far as the small towns are concerned I should say that a fundamental basis for any agreement on financial or other means of co-operation between themselves, other authorities and the central government would have to be that no unduly large financial burden should fall on the present ratepayers, or at most that any rate burden they are called upon to bear should be in relation to the benefits that the present ratepayers would receive. I know that there is always a tendency in affairs of this nature for one authority to try to shift the financial burden on to someone else, and the Town Development Act certainly provides more than usual opportunities for attempts to do this. Nevertheless when we are dealing with proposals for the relief of congestion in the big cities we are dealing with what many regard to be national, not local, issues, and this should be recognised in the extent to which the Treasury will allow the Minister to participate by way of financial contributions.

My personal view is that the Town Development Act may ultimately prove to be of very great use, but that it is too early for us to know to what extent it will be used in the immediate future. I am sure that many a small town would like to play a part in making it a success, but an element of apprehension does exist because as yet the financial implications are not fully understood.

DORMITORY SETTLEMENTS

Whatever we may feel about the desirability of promoting more schemes under such statutes as the New Towns Act or the Town Development Act we should, of course, not blind ourselves to the fact that many of the next million houses are likely to be built in dormitory settlements at varying distances from the edges of the big towns.

This is not necessarily a bad thing at all. It is only when the process gets out of hand that it becomes a social evil. Given the will on the part both of the local planning authorities, and of the Minister when he has to decide appeals against planning decisions which seek to control the process, a great deal can be done in the course of ordinary planning administration to keep it from getting out of hand. The removal of licensing restrictions and development charges has once again set in motion the processes which encourage the investment of private capital in house building. The pressure of people in the big towns forces up surrounding land values and creates a desire on the part of the landowner to sell. The demand for houses outside the big towns, plus the willingness of the landowners to sell, attracts those building firms which wish to invest money in the provision of a large number of houses for sale.

During the somewhat frustrating days of licensing and development charges my County Council, as the local planning authority, did not receive a single application for approval of private estate development on even a moderate scale. Now something akin to boom conditions exists particularly in the larger villages near the County Borough of Lincoln.

Here there is a tendency for both people and industry to migrate into the rural areas where there is more elbow room and less congestion.

Our problem in this type of area is one of development control coupled with a need to encourage the development to go to the right place.

If the general pattern of overspill development near the large towns is to be kept in check and concentrated as far as possible in certain selected towns or villages in the manner envisaged in most county development plans, then there has to be an artificial check put on the haphazard process of urban sprawl. Green belts will need preservation and the old evils of ribbon development must be discouraged.

Such things can only be achieved by a fairly rigid adherence to policy decisions once they have been made.

SHEFFIELD'S SLUM PROBLEM

13,500 *Unfit Houses*

SHEFFIELD has 13,500 houses unfit for human habitation, according to figures given at the meeting of the housing committee on August 10. This is out of a total of 156,614 dwellings in the city.

ALD. ALBERT SMITH, the chairman, said that it was intended to pull down 4,500 in the next five years if there was sufficient labour available, and patch up 9,000. This would involve the Corporation taking over and handling the 13,500 slums. It was estimated that it would take 15 years to demolish the lot and rehouse the occupants.

It is expected that rehousing will take place in the areas to be cleared. The redevelopment scheme for the Park Hill area has already been announced. Netherthorpe is the next district to be dealt with, followed by the Woodside-lane area, and then around Lopham-street in the Burngreave district.

NEW HOUSING SCHEME

Sheffield Corporation are to build a number of new-type four-bedroomed houses on the Corporation's Gleadless Valley Estate, to provide what Mr J. L. Womersley, ARIBA, Sheffield City Architect, has termed "an architectural contrast."

They will be in square semi-detached pairs at intervals, strategically placed, in the layout of the rows of terrace-type houses.

OFFICIAL NOTIFICATION

Imports of Copper Wire Rods from North America

THE Board of Trade announced on February 9 last that a quota of 7,500 tons per annum had been established for the import of black hot rolled copper wire rods from Canada and the United States of America during the year beginning April 1, 1955. The quota was to be allocated in two half-yearly instalments.

Agents of North American producers of rods and wire drawers in the United Kingdom are now invited to apply for licences to import during the *second* period, and applications should be submitted on Form ILB/A to the Import Licensing Branch of the Board of Trade, 43 Marsham-street, London, SW1, not later than September 1.

Further details are given in Notice to Imports No. 745, dated August 13, issued by the Import Licensing Branch, BOT.

BREACHES OF SAFETY REGULATIONS

Steel Erectors Fined £15

PLEAS of guilty to three summonses brought by Mr. Henshall, factory inspector, were entered by counsel (Mr. Alan Fletcher) at Old-st. Magistrates' Court, on August 12, on behalf of Cozens and Sutcliffe, Ltd., of Hyde Works, Great Cambridge-rd., Enfield.

The offences were said to have occurred at a building site known as City Wall House, Chiswell-st., Finsbury, in April.

It was alleged that the defendant company contravened a Building (Safety, Health and Welfare) Regulation in that a Butters three-ton Scotch derrick crane, being a jib crane having a derrick jib, was used without being fitted with an approved type of automatic indicator as specified in the Regulations. It was also alleged that an Electricity Regulation had been contravened in that the terminals of a 12hp electric motor installed on the crane were not covered with insulating material and further efficiently protected where necessary to prevent danger or so placed as to prevent danger as far as was reasonably practicable. The third summons alleged a contravention of the same Electricity Regulation in that certain insulated conductors supplying the motor driving the crane were similarly not further protected.

MR. HENSHALL told the magistrate (Mr. Leslie Marks) that there were on the site the builder and certain sub-contractors of whom the defendant company was one. They were steel erectors. The matters before the Court concerned a crane belonging to the defendant company.

Regulation 54 of the Building (Safety, Health and Welfare) Regulations laid down that where a crane could lift a load of more than one ton it must be provided with an automatic device which would give the driver a visual and audible warning that the load was near its maximum at any particular angle of the jib. That device was not so fitted. The crane, in fact, could lift three tons.

The other two cases were electrical matters, Mr. Henshall went on.

The crane was driven by a 12hp electric motor and there was a bunch of six cables going to that motor. They ran across the floor of the cab which was so confined that the driver could not avoid treading on them. The voltage of the cables was 400 and it was required by Regulation II that those cables, which were insulated ones, should be further efficiently protected.

Replying to the magistrate, Mr. Henshall said that if the driver's boot cut through the cables he would be electrocuted.

The cables, he said, went to a terminal box containing six terminals. A cover was provided by the makers but it was missing when the electrical inspector called on April 7, and the "400" terminals were exposed to the driver, being about a foot away from his knees.

MR. FLETCHER, in an address in mitigation, said the company were well aware of the Regulations and were exceedingly anxious to observe them. They very much regretted the offences.

There had been a steel strike or some other labour trouble and the company left the site and hired the crane to another company. When they came back again, their foreman did not, unfortunately, examine the crane with all the care he should have used and these faults were not discovered. As soon as they were pointed out they were put right at once.

The company, Mr. Fletcher said in conclusion, were most anxious to protect and safeguard their men and observe the Regulations

The magistrate imposed a fine of £5 on each summons (£15 altogether) and ordered the company to pay a further £2 6s. 11d. by way of costs.

LAXTON'S BUILDERS' PRICE BOOK, 1955

THE WHOLE of the prices in this *edition have been revised and incorporate the increased wages which became operative in April last. Each trade or major group of prices is preceded by the basic prices of materials upon which they are calculated, thus facilitating adjustments necessitated by variations in the cost of materials.

Percentages have been given at the end of each group of prices representing the effect of a penny variation in the basic wage rate, by means of which prices can be adjusted for wage grades other than London, or for any revisions that may come into operation during the currency of this edition.

The current wage rates and gradings for most towns are given, with relevant extracts from the London Working Rule Agreement and the latest National Schedule of Daywork Charges, Professional Scales of Fees and Charges; and other useful data and memoranda are included as usual. An important part of the book is the list of brands and trade names, containing approximately 11,000 items, together with a separate alphabetical list of names and addresses, etc., of firms connected therewith.

TOWN PLANNING DECISION

Private Developer Wins Case Against County Council

A BIRMINGHAM company secretary, refused permission to erect houses on land adjoining his Tamworth residence because Staffordshire County Council wanted the land for an infant welfare centre, has had his appeal allowed by the Minister of Housing.

Mr. Percy Findley, of Merryhill Close, Amington-road, Bolehall, claimed at the inquiry last year that he had a gentleman's agreement with Tamworth borough council that he should be allowed to develop the half-acre site after he had sold other land to the council for building purposes. Mr. Findley also told the inquiry that he was prepared to offer the county council an alternative site for the infant welfare centre.

The Minister, notifying Mr. Findley of his decision, says he is satisfied that the proposal for the infant welfare centre cannot be regarded as so firm that it must override all other considerations. The reservation of the site for a centre was not absolutely essential, and he did not feel justified in withholding permission for Mr. Findley's proposed development of the land for the erection of four houses or bungalows.

*LAXTON'S BUILDERS' PRICE BOOK, 1955. Edited by P. T. Walters, FRICS. (London: Kelly's Directories, Ltd.) Price 35s.

LOW-COST HOUSING IN MALAYA

An Experimental Scheme in Precast Concrete

THE following are some notes on experiments in constructing low-cost houses in precast concrete in the Federation of Malaya, carried out during the past two years by the Housing Trust which is a new Government-sponsored organisation. They have been prepared by Mr. Vernon Z. Newcombe. ARIBA. MTPI. architect-manager, Housing Trust. Federation of Malaya.

The financial resources available to the Trust are limited. It is, therefore, the present policy to build only houses for sale at cost price plus overhead expenses and to use thus the allotted capital as a revolving fund.

People have been accustomed in this part of the world for many years to unusual standards of overcrowding and discomfort, and they prefer to stay in their present accommodation, even if it is sub-standard, rather than buy a house which does not correspond with their conception of a home. Although no information was in existence on design standards of housing in Malaya it has become clear very quickly that the Malayan public have most decided views on this subject. In selecting a house they will consider layout (there is a preference for detached houses), orientation, construction and appearance.

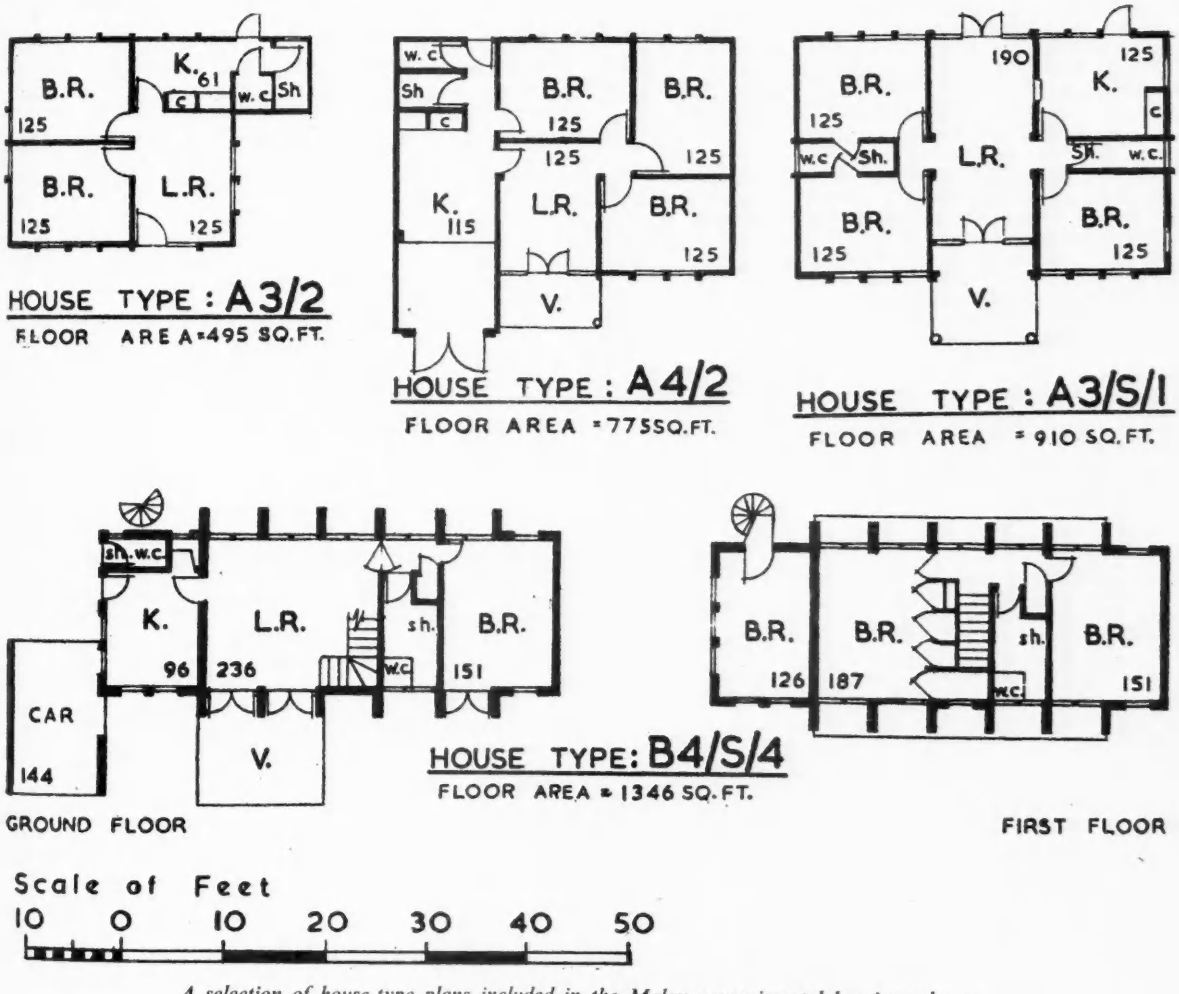
The country has a population of about five million inhabitants. About 50 per cent. are Malays and about 50 per cent. are Chinese. There is also a substantial Indian minority and there are members of other communities (Ceylonese, Eurasians, Europeans, etc.). Views on housing differ between the various communities, which makes matters more complicated.

Precast concrete construction is very suited to climatic conditions in Malaya; especially a form of post and panel construction which permits comparatively large openings. All concrete parts can be made as thin as is structurally permissible. It is possible to cast concrete sections of 1 in. or even less because the constant range of temperatures and humidity are not likely to affect them adversely.

It was decided to carry out some experimental pilot housing schemes in this form of construction. The main innovation which was introduced was a standardisation of components. All plans were drawn on a 40-in. planning grid. With 5 in. by 5 in. columns placed at the intersections of the grid lines sufficient space remained between the columns for a 2 ft. 7 in. door with frame. All columns were made to a standard length of 9 ft. above floor plus a length of 21 in. in the foundations. They were reinforced with four ½-in. bars. All parts of the houses which were lower than the standard height were built in brick rendered on both sides. The only parts of the houses thus affected were kitchens, showers and w.c.s where a continuous impervious surface is in any case desirable.

All slabs were standardised at 36 in. by 8⅝ in. by 2 in. and reinforced with No. 14 BRC fabric.

Assembly started with the erection of the columns each cast in a 14 in. by 14 in. by 2 ft. concrete foundation block. Then the concrete slabs were slotted into the grooves on either side of the columns. The ½-in. joints between slabs were filled with mortar. A 5 in. by 3 in. wall plate was fixed to metal dowels protruding from the tops of columns. The roof was constructed in the conventional way with ceiling joists or collar beams (or both) acting as tie beams. The precast concrete work was given a finish of two or three coats of cement paint.



A selection of house-type plans included in the Malaya experimental housing scheme.

HOUSING THE AGED

Sussex Housing Managers' Memorandum

THE Sussex Housing Managers' Group, representing housing managers and officers in the county of Sussex and adjoining areas, has been giving special attention to the subject of housing aged persons. The information obtained and the conclusions reached by the Group are summarised below.

The proportion of persons over 60 years of age in 1939 was 18 per cent. of our population; it is now estimated to be 20 per cent. and will rise to approximately 30 per cent. in 1979. A survey in 1940 showed that probably 90 per cent. of old people lived independent lives, either in their own homes or as lodgers in the homes of their children or elsewhere. The extension of social benefits in the form of pensions and other social security measures will both psychologically and practically engender an independence in old people who will tend to become less content to live with their children's families.

Between the wars 1½ per cent. of all houses built (4.2 per cent. of all municipal houses) were specially designed small dwellings for old people. The divergence of practice amongst large municipal authorities is surprising. York have built, or have in course of construction, 863 aged persons dwellings out of a total number of houses of approximately 8,300, Walsall 687 out of 13,000, and Norwich 776 out of 14,000. At the other end of the scale Huddersfield built 60 dwellings before the war, but have built none since, and they have 9,000 houses. Doncaster have approximately 7,500 houses with 152 aged persons' dwellings. To take an instance in the county of Sussex, Brighton built 124 dwellings before the war, 104 since, and have 14 in course of construction; the total number of dwellings being 9,733.

THE POSITION IN SUSSEX

It is to be expected that the proportion of aged persons in Sussex will be somewhat higher than in the rest of the country, as many people from the environs of London retire to near-by coastal areas, and there is continual application for municipal tenancy exchanges. Sussex housing authorities naturally do not wish to give effect to transfers which would result in under-occupied houses, but there does not appear to be full recognition of the fact that there are many tenants of long-standing on existing estates who would move to smaller near-by accommodation if it were available, thus releasing bedrooms for families with young children.

There has obviously been a demand for two- and three-bed houses for some years since the war, but it is suggested that the most severe cases have now been satisfied and that attention should be brought to bear on the possibilities of rehousing tenants under-occupying accommodation too large for their needs. Apart from the obvious management possibilities, there would be some considerable saving in the total cost of housing, as except in extreme cases the building of accommodation for single persons and elderly persons should not be as much as the provision of ordinary two-storey housing.

Unfortunately existing housing waiting lists do not reflect the real demand for accommodation of the nature envisaged in this memorandum. There is little or no enthusiasm for moving to outlying estates with old people; this is understandable and should be appreciated. There is scope for a great deal of publicity and public relations if the time can be made available by the housing staff and if the authority definitely decides to make provision for housing for aged persons on an increased scale.

BUNGALOWS FAVOURED

Bungalows are generally costly to build in comparison with houses, extravagant in the use of land, and more often than not in road frontage, but are generally favoured for obvious reasons. They can, however, be economically planned into estates and can make attractive features on corners, small isolated plots, culs-de-sac, etc. They can be built at comparable prices in rural areas.

Flats are becoming more essential where there is a shortage of building land, but there is difficulty for elderly people in the case of upstairs accommodation. A possible remedy is to allocate ground floor accommodation to the elderly and upstairs to childless couples and single persons, and careful design can obviate the necessity for continual journeys up and down stairs.

Convertible houses are possibly suitable for dealing with the problem of the ever-ageing population, if the houses can be used for normal family occupation at the outset, reverting to two flats by simple conversion at a later date. These dwellings can also be absorbed into estates in course of construction, which meets the wishes of most sociologists who condemn the practice of isolating old people on separate estates.

The Royal College of Physicians say that all dwellings for aged persons should have two bedrooms. Whilst this may be desirable it is by no means essential for aged couples, except for cases of illness and disability. The need for an extra room for friends and relatives has not been overlooked, but economical construction must be borne in mind. Bed recesses, well planned with ample light and able to be screened for privacy are quite popular, and can be cleaned easily.

If solid fuel appliances are provided—and most persons definitely prefer at least one open grate—then careful siting of storage is necessary, and preferably deliveries should be made to the immediate outside of the dwelling to be accessible from an inside hatch to avoid going out of doors in inclement weather. Warmth is a most important factor to be considered — with due regard to the economies of operation and facility in use.

Shelves, cupboards, meters, sinks, etc., should be planned to avoid the necessity of standing on chairs, etc. Handrails should be provided for baths. It is considered that separate fixed baths are essential in newly-constructed separate dwellings, but that sharing and other variations can be made in conversion and adaptation schemes on existing properties.

Adequate natural lighting is essential and the natural inclinations of elderly persons to sit and look out on the street should be met by the provision of a window with a low cill.

It is probably true to say that in urban areas and very large villages old people are concerned as much with the shops and surroundings, neighbours, churches, cinemas and pubs, as with the four walls of their own home. Herein lies the main difficulty in persuading them to move.

In bombed towns in-filling in central areas will provide some remedy for the disadvantages outlined above, but the scope is small and there is intense competition from commercial interests for sites of this nature. The adaptation of older houses therefore commends itself, as invariably the properties are in the central areas and generally very under-occupied at present, or even empty and falling into decay. An important factor, too, is the spaciousness which enables treasured possessions and furniture to be retained. There is also the variety in types of accommodation and elderly persons, as much as anyone, value the opportunity of being a little different from the rest.

The Housing Repairs and Rents Act, 1954, contains valuable provisions for the adaptation and conversion work envisaged above, and local authorities should be encouraged to experiment with this work. The total costs, including purchase price, conversion costs, etc., are often far less than the costs of new construction, and the fact that the properties are usually in the centre urban areas accessibility to shopping centres, etc., obviates expenditure on travelling.

The comparative cost of housing this class of person may be considered expensive and local authorities cannot be blamed for hesitating to implement all of their powers, knowing full well that they can only satisfy a very small percentage of the real need at the outset, and that very many aged ratepayers are themselves in straitened circumstances.

THE PROBLEM OF RENT

The other problem is that of rent. Building costs and rents charged, whilst secondary in a sense to the main object of providing much needed accommodation for a special class, are none the less important from the point of view of the proposed occupiers, the local authority financing the scheme, and the rate and taxpayers as a whole. The main pre-occupation of old age pensioners without private means is the cost of living and it is paradoxical that this cost is often entirely unrelated to the rent charges for housing accommodation. The National Assistance Board is prepared to meet most rent charges for those it assists and whilst this continues the real problem is masked, and the outlook of those who are mainly concerned is not tempered with the thought that economical and efficient building and other costs must be constantly sought.

Wherever possible rents should be re-

lated to actual costs, after benefit of the appropriate subsidy, and these should be as low as possible for aged persons, within obvious limits. It is, however, manifestly clear that to ensure reasonable rents for this class some method of rent pooling may have to be introduced to offset high costs and maintain a differential.

Whilst the ultimate responsibility for providing for the general housing needs in an area is that of the local authority, it is recognised that housing societies and associations can, and are, doing very valuable work in this connection. There are many aged persons who by reason of age and/or varying degrees of infirmity, are unable to live at home and need communal care; there are others who, although living at home and able to care for themselves, are occupying houses much too large for their requirements, and might well lead a happier life if they can be rehoused in small labour-saving dwellings, thus freeing the larger dwellings for young families.

Voluntary Societies are recognised under both Housing and National Assistance Acts as eligible for financial assistance from the Government. New houses, bungalows and flats qualify for the annual Exchequer subsidy of £22 1s. for 60 years on approved schemes. Mortgages of up to a maximum of 90 per cent. of the capital costs of schemes may be obtained through local authorities under the 1936 Housing Act.

Societies providing flatlets for old people in converted houses with a resident warden or house mother, can, where the standard of accommodation is sufficiently high, obtain improvement grants under the 1952 Housing Act. Two financial schemes are available—a lump sum payment of 50 per cent. of the total estimated cost of the work (with a maximum of £400)—or a subsidy equivalent to three quarters of the estimated annual loss incurred by the works of improvement, payable annually, for 20 years.

HOSTEL ACCOMMODATION

Facilities exist for provision of accommodation and board under Section 40 of the 1949 Housing Act, but hostel life for able-bodied aged persons is not considered advisable, especially in view of the fact that the total cost of provision of such services is considerably greater than the present rate of old age pension. A £5 subsidy annually for 60 years for each bedroom provided in a newly constructed hostel is available, and smaller subsidies obtain in the conversion of existing properties. Mortgage facilities are available for construction, or adaptation and conversion.

In conclusion, attention is drawn to a scheme for the employment of old people under the auspices of a local authority. Finsbury Council and a voluntary employment fellowship have acquired a house and converted it into workrooms. Sixty-five old people are employed between the ages of 60 and 87. The object of the scheme is to provide companionship for the aged, some measure of independence and a feeling of usefulness to the community.

The Group feels that there is considerable scope for schemes of this nature, especially in Sussex where the proportion of aged persons is high. There are indications that more old persons would be willing to undertake work if given the opportunity.

BUILDING IN SHROPSHIRE

County Architect's Report

INFERIOR building materials have sometimes to be used in order to keep costs down, states the annual report of the County Architect of Shropshire, presented recently at a meeting of the county council. The high cost of materials continues to be of great concern and while good quality materials were generally available, it has been necessary in some instances to use cheaper and less satisfactory materials to keep overall costs within financial limits.

The report states that major building projects, valued at £712,247 and scheduled to start during the financial year, were started before the end of March and tenders would have to be obtained for projects of over £1 million during the next nine months. This volume of work would probably tax the resources of contractors in the area. "It is hoped, however, that the peak of building activity will be reached in Shropshire in 1956-57, and that future years may see some falling off of the demand," the report adds.

Standards at Shrewsbury

At a meeting of the Shrewsbury Town Council on July 25, allegations about the quality of certain woodwork on the Meole Brace Housing Estate were made. CLLR. J. H. T. SMOUT asked if the Housing Committee was satisfied with the class and quality of the woodwork which had gone into houses on the estate. He said that: "I have never seen such shocking timber and workmanship in all my life. I use better timber than that for packing cases."

Other council members agreed that they, too, had received numerous complaints from the Meole estate, and it was stated that it appeared they were now getting the fruit of the rushed housing undertaken some three or four years before. CLLR. MRS. C. E. THICKPENNY, the housing committee chairman, said that regarding the question of poor timber, the Borough Surveyor had informed her that the matter was being taken up with the contractor.

Cllr. Smout added that the inspection made after six months, when the contractor had to set right anything which had gone wrong in that period, was absolutely farcical because the work would last for possibly six months and only just, and the council were going to be faced with a liability of many thousands of pounds. On this point, the housing committee chairman said that she could not answer the question of the six months' maintenance. She imagined that was a common business arrangement.

BUILDING SOCIETY'S DEFICIENCY

The Building Societies Association has asked us to point out that the Southern Counties Building Society, mentioned in the Press recently as having a deficiency on winding-up, has never been included in their membership. Members of the Association are required by its rules to keep a proportion of their funds available to meet withdrawals by investors.

FUEL ECONOMY IN SCHOOLS

Findings of Building Research Station's Studies

THOUGH most schools are occupied for only about 40 hours out of the week of 168 hours, it has not been common practice to close the heating systems down to the minimum at nights and weekends. Studies recently completed by the Building Research Station at the request of the Ministry of Education show that most school heating installations can be operated far more intermittently than they are at present, and that great savings of fuel can be obtained in this way.

ANNUAL FUEL BILL

Maintained schools in England and Wales are using between 1½m. and 2m. tons of fuel a year. Each annual school building programme is adding to this total at the rate of about 60,000 tons a year. To find out how fuel bills could be reduced experiments have been carried out over three years in a school which was specially equipped as a "test bed." The results of this research were checked against a field survey of fuel consumption in 160 post-war schools. The report, which was published on August 12 (Ministry of Education Building Bulletin No. 13, "Fuel Consumption in Schools," HMSO, price 2s.), draws conclusions from this work and makes suggestions about steps which can be taken by local education authorities to save fuel in existing schools as well as in new installations.

Three different types of heating system were studied: forced warm air, radiators and floor panels. Under present practice, fuel consumptions are considerably higher in nearly all cases than calculations based on the experimental data show to be necessary. Both the field and the experimental evidence, however, agree in indicating that because of the inherent nature of the three systems their relative order of economy is forced warm air, radiators and floor panels. It is suggested that this fact must be borne in mind when selecting the system for new installations, but in existing schools as well much is to be gained by installing and correctly using control instruments of types which are readily available.

USE OF OIL

The point is also made that while the respective prices of fuels do not themselves determine the order of economy of the three systems, they may determine the most economical method of firing a particular system. Where the cost of coal is relatively high the use of oil appears to be a promising alternative to coal for radiator systems; in conjunction with a warm air system it should offer considerable economy. The annual running costs of gas-fired radiator systems and electrical floor panel systems are shown to be too high for economical use in schools.

The Bulletin also suggests that authorities should consider establishing their own agencies for checking fuel consumption in their schools, for supervising control programmes and stoking arrangements and generally for seeking out economies in heating.

Building Research Station Inquiries (2)

SOME MISCELLANEOUS QUESTIONS ANSWERED

BUILDING Research Station Digest No. 63, prepared by the Building Research Station, Garston, Watford, Herts, contains questions and answers relating to a number of miscellaneous problems affecting the industry.

We reproduce below the text of the Digest:—

SAND-LIME OR CONCRETE BRICKS?

Question: I am considering the use of sand-lime or concrete bricks. Have you satisfactory reports of these types of brick as compared with normal clay bricks from the point of view of durability and strength?

Answer: Sand-lime or concrete bricks complying with the requirements of BS187:1942 or BS1180:1944 respectively can safely be used in any position provided that the class chosen is that given in the Standard as suitable for the purpose. There are four classes for each type:—

Special purpose: For use in positions where they may be exposed to temperatures below freezing when saturated with water as in parapets or footings.

Classes A(i) and A(ii): For use in external facing and general building work. (Class A(ii) bricks should not be laid in strong cement mortars.)

Class B: For internal work in mortars other than strong cement mortars.

Mortars for use with these bricks are discussed in Digest No. 6. Further information about the bricks is given in NBS Bulletin No. 4, "Sand-lime and concrete bricks."

REMOVAL OF CEMENT SLURRY STAINS

Question: We have to remove cement slurry stains from sand-faced brickwork. Can you please advise us how to remove these stains without damage to the brickwork?

Answer: There is no easy or satisfactory way to remove the stains, once the cement has set. An acid that will attack the cement quickly may also damage the surface of the brickwork either at the time of application or later on because salts derived from action of the acid on the cement may produce efflorescence or spalling. The safest course would be to remove as much as possible by brushing with clean water and to treat what remains with a 10 per cent. solution of spirits of salts. Before using the acid, which is best applied by a swab, the brickwork should be well wetted, to reduce absorption of acid. The acid should not be allowed to remain on the surface for more than about one hour; at the end of that period the brickwork should be hosed down thoroughly and another application of acid made, if necessary. Great care is needed when using the acid and rubber gloves should be worn. Splashes of cement slurry or mortar on brickwork should always be dealt with immediately; it is then easy to remove them completely by brushing with copious supplies of water.

NAILS FOR SLATES AND TILES

Question: I normally specify copper nails for fixing slates and tiles. What other kinds are available and how do they compare as regards durability?

Answer: Guidance on the type, weight, size and composition of nails for slates and tiles is given in BS Code of Practice CP142:1951. Copper nails are durable and are suitable for most conditions. Cast yellow metal nails are even more durable and in heavily polluted or acid atmospheres it would be better to use them. In certain circumstances, e.g., on roofs exposed to strongly acid atmospheres, it might be necessary to consider lead nails or even hardwood pegs. Zinc nails may be used in rural or urban districts but not on roofs near the sea. The use of galvanised or steel nails is not recommended in any circumstances. Aluminium alloy nails are now available although they are not mentioned in the Code and the Station has no experience of their use in practice. They are likely to prove durable provided that the alloy is suitable for the particular exposure conditions.

OIL ATTACK ON CONCRETE

Question: The granolithic concrete floor around our vegetable oil filling plant has disintegrated and will have to be renewed. Can anything be added to the new concrete mix to prevent attack? Can you say whether some types of oil affect concrete more than others?

Answer: Some vegetable oils attack Portland cement concrete, softening the cement. There is no admixture that could be recommended which would make concrete resistant to attack. High alumina cement has considerably more resistance than Portland cement and the best type of finish at reasonable cost would be ceramic tiles bedded and pointed in high alumina cement mortar.

In general, animal and vegetable oils attack Portland cement concrete. A good Portland cement granolithic finish is resistant to mineral oils.

NOISE REDUCTION IN HEATING INSTALLATION

Question: The heating installation in a block of flats includes an oil-fired boiler and a water circulating pump. So far as can be ascertained airborne noise from these is not audible in the flats but noises are transmitted along the piping. If the flow and return pipes were cut and short lengths of rubber hose used to make the connections, would this substantially reduce the transmission of noise?

Answer: The use of lengths of rubber hose connections in the piping would help to reduce considerably the transmission of sound; the length of the hose between the ends of the metal piping should be at least six inches at each point. The manufacturers of reinforced or armoured rubber hose could advise on permissible pressures and on the details of the connections. It would also be advisable to isolate the pump and motor from the structure by resilient mountings. There are several proprietary types and the makers would advise on the type best suited to the particular conditions.

SILICONES FOR WATERPROOFING WALLS

Question: I understand that silicones have valuable waterproofing properties. Have you any information about their use for this purpose on brick or stone walls?

Answer: It is true that silicones can be effective in waterproofing treatments and it is understood that silicone solutions have been applied to walls for this purpose. The Station's work has, so far, been restricted to trials on a laboratory scale. These trials, using silicone solutions that penetrate deeply into porous materials, have shown that, in some cases, serious spalling or surface crumbling has resulted from the treatment, the reason being the crystallisation of salts behind the treated layer. The risk depends on the extent to which salt solutions are moving or can move within the wall. The question of waterproofing will normally arise only with buildings that have been up some time, and information about the incidence or absence of efflorescence should exist. Where efflorescence has occurred it would be unsafe to use silicone waterproofers; if there has been none the risk of spalling is probably much less. If there is any doubt it would be advisable at present to restrict the use of silicone solutions as surface waterproofers to small experimental areas of wall and to observe the results after at least one year.

PLASTERING OF PAINTED BRICKWORK

Question: I have often to arrange for previously painted brickwork to be plastered. In the past I have had all paint removed by scraping and chipping, the joints raked out and the walls hacked and plastered in the normal way in lime mortar. In spite of the apparently good mechanical key provided, the plaster rings hollow in many places and there have been some falls. I should be glad of your advice for future work.

Answer: The risk of failure would certainly be greatly reduced if the specified preparation of the surface had been properly carried out but even if a large proportion of the paint is removed the background is usually left contaminated with oil to some depth and the surface pores are clogged. This considerably reduces the adhesion of applied plaster. In these circumstances it is probably better not to try to remove the paint but to concentrate on improving adhesion by other means, e.g., by hacking the surface to the extent of exposing a fresh surface over at least 50 per cent. of the area and raking out the joints, or by fixing wire mesh or fabric about $\frac{1}{4}$ in. from the surface of the brickwork. To reduce the risk of failure to the minimum both treatments could be applied. The former treatment is laborious; there should be careful supervision and inspection of the prepared surface before plastering is begun.

The choice of plaster is important. Undercoats based on lime, cement or cement gauged lime should be avoided if possible as they shrink on drying; retarded hemi-hydrate gypsum plasters (Class

B of B.S.1191) or one of the proprietary concrete bonding plasters, are to be preferred. If metal mesh has been fixed a special undercoat plaster containing a small amount of lime should be used; for details see Digest No. 14.

Where the bricks and jointing mortar are so hard that hacking and raking joints would be difficult or where these operations would be too noisy, a coating of bitumen or pitch product applied direct to the painted surface and sanded might be tried as a base for plastering, provided there is no doubt about the adhesion of the paint to the brickwork. The Station has examined a number of examples of this treatment and they have, in general, been successful. A single coat of plaster is recommended and this should be a Class B gypsum plaster as mentioned above. Because of the risk of the bitumen or pitch bleeding through the plaster it would be advisable to use a polyvinyl acetate emulsion paint for decoration.

FLUORESCENT LIGHTING

Question: I have heard of various objections to the use of fluorescent lighting, e.g., that it may cause discomfort or even harmful effects and that it does not always compare favourably in cost with lighting by ordinary filament lamps. I would be grateful for any information you can give me on this subject.

Answer: The effects of fluorescent lighting have been investigated in several countries and no evidence appears to have been adduced that any real risk of discomfort, impairment of vision or other undesirable physiological effects will result from *properly* designed, installed and maintained fluorescent lighting systems. Glare is often one of the chief faults. It has been shown that the bare lamp is too bright for comfortable viewing if it is located within the normal field of view and in installations that permit a direct view of a large number of lamps the effect can be very acute. The risk of glare can be eliminated if the fittings are correctly designed to prevent an unscreened view of the lamp within an angle of 45° from the centre of the fitting and to direct some of the light on to the surrounding ceiling and walls. With well designed units, fluorescent lighting can give as satisfactory an effect as that given by the best type of filament lamp installation.

Sufficient work on flicker has not yet been done to enable a definite opinion on the effects of flicker in fluorescent lighting to be offered, but there is no reason to believe that harmful effects can result from well designed installations. In general, flicker effects can be much reduced by suitable circuit design and, particularly, by screening the ends of the tubes.

The economic advantages of fluorescent lighting are not so great as the efficiency of the lamps compared with filament lamps would suggest. With daylight type fluorescent lamps users seem to prefer more light than from filament lamp units giving the same distribution; there is some loss of power in auxiliary gear and the maintenance costs tend to be higher. Fluorescent lighting can best be justified on economic grounds where high levels of illumination (i.e. above 20 lumens per sq. ft.) are required over the greater part of the working day; it tends to be expensive for *moderate* levels of illumination unless the cost of current is high.

REMOVAL OF OIL STAINS

Question: My attempts to remove oil stains from walls and from concrete floors have not been very successful. Repeated sponging with a solvent appears to have little effect after the first application. Is there any better method of getting rid of the oil?

Answer: Sponging with a solvent may suffice in some cases but with such materials as brick, stone, concrete and plaster a means of drawing the oil from the pores is needed. This can be done by a "poulticing" method and for deep-seated stains the operation may have to be repeated several times at suitable intervals. A stiff paste of whiting, talc or other inert powder is made with a suitable solvent, e.g., carbon tetrachloride or benzene. The first, being non-inflammable, is to be preferred. After wetting the surface thoroughly with the solvent the paste is applied with trowel or brush and allowed to dry. Evaporation of the solvent carries the dissolved oil to the surface of the whiting which, when dry, is removed by brushing. Preliminary trials should be made, particularly with dark-coloured brickwork, as there may be difficulty in restoring a completely satisfactory appearance. If appearance is important, a trial with finely-powdered brick in place of the whiting might be worth while.

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BUILDING EDUCATION

Evening Classes in London

"FLOODLIGHT," the London County Council's annual guide to evening classes, has recently been published for the session 1955-56.

The guide contains an alphabetical list of evening class subjects and indicates the appropriate institutions where instruction may be obtained in each subject.

Classes in architecture are provided at Northern and Regent-street Polytechnics; Brixton School of Building, and Hammersmith School of Building and Arts and Crafts. Architectural design is taught at Central School of Arts and Crafts and Woolwich Polytechnic. A course for special finalists is held at Hammersmith School of Building. Appreciation classes are held at City, Hammersmith (Branch), North London, South-East London and South-West London Literary Institutes; Goldsmiths' and Morley Colleges.

Building courses are as follows: *Administration*: National Certificate Courses (Ordinary and Higher) and courses for adults with experience of the industry are provided at Brixton and Hammersmith Schools of Building; Northern and Regent Street Polytechnics and South-East London Technical College. Courses in management and supervising subjects for persons connected with the building industry are provided at Brixton and Hammersmith Schools of Building and South-East London Technical College.

Construction: Courses for the National Certificate in Building, and the examinations of the Royal Institution of Chartered Surveyors, the Institute of Builders, Auctioneers and Valuation Surveyors, and the City and Guilds of London Institute are provided at Brixton and Hammersmith Schools of Building; Northern, Regent Street and Woolwich Polytechnics; Hackney, South-East London, and Wandsworth Technical Colleges.

Courses for the examination of the Institute of Quantity Surveyors are given at Brixton and Hammersmith Schools of Building and Northern and Woolwich Polytechnics and South-East London Technical College. Building courses for juniors are arranged at many junior technical colleges and evening departments of day colleges.

Law: Courses on the London Building Acts, the law of property, arbitration, contracts, landlord and tenant, etc., are given at Brixton and Hammersmith Schools of Building, Northern, Regent-street and Woolwich Polytechnics and South-East London Technical College; Catford, Clapham Junction, Highbury, Kennington, West London and Westminster Colleges of Commerce.

Enrolment week this year begins on September 19.

Copies of "Floodlight" may be obtained (price 6d.), from bookshops and newsagents or from the Education Officer, County Hall, SE1.

FORTHCOMING CONFERENCE

The Society of Industrial Engineers in association with the Work Study Society are holding a week-end study conference on November 4 and 5 at St. Ermins Hotel, Westminster, SW1, on the subject of "Aids to Effective Production Management." The conference is open to non-members. Details from the Hon. Conference Organiser, The Society of Industrial Engineers, 28, Victoria-street, SW1.

BRIXTON SCHOOL OF BUILDING

Building Supervisors' Discussion Group

THE LCC Brixton School of Building are again offering facilities for general foremen, building supervisors, and contract managers to discuss some of the many problems with which they are confronted when carrying out a building contract. As in previous years an interesting programme has been prepared, and a specialist in the particular topic selected for the evening will open the discussion.

The group will meet each Monday evening, commencing on September 26, at 6.45 p.m. The fee for the session is £2 5s.

Certificate Course in Concrete Practice

THE School are also offering again this session a course in preparation for the City and Guilds of London Institute Examination in Concrete Practice.

This course is designed to meet the needs of all those who are engaged in supervising concrete work or who anticipate doing so in the future. It commences on Thursday, September 29, at 6.30 p.m. and will continue each Thursday evening throughout the session. Fee for the course is £1 4s.

Applications for the above courses should be addressed to The Head of the Building Trades Department, 55-57, Barrington-road, SW9.

The Builder

CURRENT RATES OF WAGES

AS FROM APRIL 18, 1955. **(Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)**

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	4/-	3/11½	3/11	3/10½
Labourers	3/5½	3/5	3/4½	3/4

Town.	Grade.
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Aldeburgh	A2
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A
Altrincham	A1
Amble	A
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone R.D. (parts of)	A
Aylesbury	A2
Ayiesham	A2
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A
Barnoldswick U.D.	A
Barnsley C.B.	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D. (exc. Thrussington A2)	A
Barry	A
Basford R.D.(exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley M.B.	A
Baxterley	A1
Beaconsfield & District	A1
Beari	A
Beccles	A2
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick Borough	A
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U.D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A1
Breconshire, County of...	‡A2
Brent Knoll	A2
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Broughton, Flint	A
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire,County of	‡A2
Carlisle	A
Carmarthenshire,Cnty of	‡A2
Caernarvonshire, Cnty. of	‡A2
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippen-ham Within and Harden-huish)	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A1
Crewe	A
Cromer	A1
Crook and Willington U.D.	A
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Didcot	A2
Diss	A2
Doncaster C.B.	A
Dorking	A
Dorset, County of (except-ing Poole, Swanage and Wimborne A1)	A2
Dover	A2
Dovercourt	A
Driffield U.D.	A1
Droitwich M.B.	A
Dudley C.B.	A
Dunstable	A
Durham City	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Exeter	A
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough U.D.	A
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A
Gravesend	A
Great Yarmouth	A
Grimsby C.B. & R.D.(part)	A
Grimsby R.D. (remainder)	A2
Guildford District	A2
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate	A
Hartlepool	A
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Hinckley U.D.	A
Hitchin	A
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A1
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Lancaster	A
Leamington M.B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A1
Letchworth	A
Lewes	A2
Lichfield M.B.	A
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	A1
Lowestoft	A
Loxton	A2
Luton	A
Lyneham (Devon)	A2
Macclesfield	A
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A1
Malvern U.D.	A1
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough U.D.	A
Maryport	A
Matlock U.D.	A
Melksham	A2
Melton Mowbray U.D.	A1
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A
Milford Haven	A1
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A
Nelson	A
Newark-on-Trent R.D.	A1
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
,, Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Rayleigh	A
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A
Sleaford U.D.	A
Slough	A2
Smethwick C.B.	A
Snettisham	†A
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A
Stafford M.B.	A2
Staines	A
Stamford M.B.	A
Stantonwick	A1
Stevenage	A
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A1
Stratford-on-Avon M.B.	A
Sunderland District	A
Sunningdale	A1
Sutton Coldfield M.B.	A
Swaffham	A2
Swanage	A1
Swansea	A
Swindon	A
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thorpe Bay	A
Thurrock U.D.C. Area	A
,, North of, to Billericay	A
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington U.D.	A
Wells (Norfolk)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A1
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Wilmslow	A
Wilts. County of	‡A2
Winchester	A1
Windermere	A2
Windsor and Eton	A
Wisbech	A2
Witham	A1
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A2
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
York	A

For Birkenhead, Liverpool and London the rates are:—Craftsmen, 4s. 1½d.; Labourers, 3s. 7d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 4s. Id.; Labourers, 3s. 6½d. †Plus 2d. per working day. ‡ This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 3s. 1½d. per hour. Women engaged on work other than craft processes, 2s. 9½d. per hour.

For Building Trade Wages in Scotland see page 332.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchants' warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	4	6
Pit Sand	,,	1	2	11
Washed Sand	,,	1	5	1
¾ in. Shingle	,,	1	1	5
¾ in. Broken Brick	,,	1	0	0
Pan Breeze	,,		10	3
Fine or Coarse Foamed Slag Aggregate	per ton	3	0	9
2 yds. of fine and 2.6 yds. of coarse per ton				

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	5	1	6
1 to 6 tons, site	,,	5	13	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	12	0
1 to 6 tons do. site	,,	6	4	0
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots ...	,,	7	3	0
Other colours according to colour.				
In 4-ton lots from 295s. 0d. to 685s. 0d. per ton.				
White Portland Cement	,,	13	2	0
Under 1 ton	per cwt.		15	9
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	14	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 5s. 0d. to £14 0s. 0d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	8	3
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	8	9
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	10	0

BRICKS

		£	s.	d.
Full Loads.				
First Hard Stocks	per 1,000	11	17	0
Second Hard Stocks	,,	10	16	0
Mild Stocks (Kiln Burnt)	,,	9	1	6
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose do.	,,	6	13	0
Sandfaced	,,	7	13	0
Best Blue Pressed Staffs (London Stations)... ...	,,	27	5	6
Do. Bullnose (London Stations)	,,	27	19	6
Blue Wire Cuts (London Stations)	,,	24	14	0
Midhurst Lime Bricks (London sites)	,,	10	3	0
Uxbridge Whites (London sites)	,,	9	6	6
Special Purpose Sandlime Bricks (London sites) ...	,,	7	14	0
2½ in. Best Stourbridge Fire Bricks (London stations)	,,	26	6	3
3 in. do. (London stations)	,,	31	12	0
2½ in. Moler Flue Bricks (London sites)	,,	36	0	0
2½ in. Machine-made Sandfaced Red Facings (London sites)	,,	14	4	6
2⅝ in. Machine-made Multi Red Facings (London sites)	,,	14	13	6
2⅝ in. Hand-made Sandfaced Red Facings (London sites)	per 1,000	14	11	0
2⅝ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	,,	14	15	6
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London sites)	,,	17	5	6
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London sites)	,,	17	5	6
Rubber Bricks for gauged arches (London sites) ...	,,	41	10	0
2⅝ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	,,	13	6	0
2⅝ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	,,	14	18	0
Glazed Bricks (London Sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 17½% for Best quality and plus 17½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area.

			HOLLOW CLAY PARTITION BLOCKS (Keyed)							
			Minimum lorry loads.							
*2 in.	140 yds.	... ...	per yd. sup.			4	4			
*2½ in.	140 yds.	... ...	,,			4	7			
*3 in.	120 yds.	... ...	,,			5	4			
			BUILDING BLOCKS (Keyed)							
*4 in. (6 cavity) ...	95 yds.	... ...	,,			6	9			
6 in. (8⅝" × 5⅝") ...	1,250 Blocks	... ...	per 1,000			26	6	0		
*Half blocks at no extra charge.										
			CLINKER CONCRETE							
2 in.	100 yds.	... ...	per yd. sup.			3	9			
2½ in.	85 yds.	... ...	,,			4	4			
3 in.	75 yds.	... ...	,,			5	3			
4 in.	55 yds.	... ...	,,			6	5			
			CRANHAM							
2 in.	,,					6	8			
2½ in.	,,					7	4			
3 in.	,,					8	7			
4 in.	,,					10	7			
4½ in. Load bearing quality	,,					11	8			
			MOLER PARTITION BLOCKS							
2 in.	150 yds.	... ...	,,			15	6			
2½ in.	120 yds.	... ...	,,			15	9			
3 in.	100 yds.	... ...	,,			16	0			
4 in.	90 yds.	... ...	,,			19	0			
			THERMALITE PARTITION BLOCKS							
2½ in.	120 yds.	... ...	,,			6	11			
			THERMALITE LOADBEARING INSULATING BLOCKS							
3 in.	100 yds.	... ...	,,			8	3½			
4 in.	75 yds.	... ...	,,			10	9			
5 in.	60 yds.	... ...	,,			13	5			
6 in.	50 yds.	... ...	,,			16	1½			
8 in.	37½ yds.	... ...	,,			1	1	6		
9 in.	33 yds.	... ...	,,			1	4	3½		
			FLOOR BLOCKS AND FILLER TILES							
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads	per 1,000					33	6	0		
4 in. do.	,,					35	14	0		
5 in. do.	,,					42	10	0		
6 in. do.	,,					47	17	0		
7 in. do.	,,					58	8	0		
8 in. do.	,,					68	9	0		
10" × 3" × 5⅛" Filler Tiles in multiples of 10 tiles	per 1,000 multiples					56	15	0		
12" × 3" × 5⅛" do. do.	,, ,,					64	10	0		
10" × 4" × 5⅛" do. do.	,, ,,					71	0	0		

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 Pieces under 2 tons	Under 100 Pieces under 2 tons
Best Quality	+77½%	+107½%	+117½%
B.S.S. Best do.	+10% +77½%	+10% +107½%	+10% +117½%
Tested Quality	+37½% +77½%	+37½% +107½%	+37½% +117½%
B.S.S. Tested do.	+47½% +77½%	+47½% +107½%	+47½% +117½%

STONEWARE DRAIN PIPES, etc.—*continued*

	£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths) ... per 1,000	11	3	6
4 in. do.	14	14	6

DAMP COURSE

Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area ... ... per yd. sup.		3	1
Asbestos base ditto 7 lb. per yd. sup. do. do. ,,		5	0
Lead lined bitumen ditto 9½ lb. per yd. sup. do. ,,		11	3
18 in. ×9 in. British damp course slates ... ... per 1,000	38	6	0
14 in. ×9 in. do do. ... ... ,,	29	11	0
9 in. ×9 in. do. do. ... ... ,,	18	2	6
18 in. ×4½ in. do. do. ... ... ,,	17	15	6
14 in. ×4½ in. do. do. ... ... ,,	14	1	9
9 in. ×4½ in. do. do. ... ... ,,	9	7	6

STONE

Bath Stone—			
Monks Park ... ... per ft. cube		8	0
St. Aldhelm Box Ground ... ... ,,		9	0
Delivered in railway trucks at South Lambeth B.R. Western Region			
Doulting Stone Random Blocks. Delivered London area ,,		8	9
Beer Stone. Delivered London area ... ... ,,		8	3
Portland Stone—			
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region ... ... ,,		8	3½
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.			
9 in. × 3 in. Rubbed, weathered, throated and stooled cills ... ... per ft. cube	3	10	8
12 in. × 6 in. do. do. ... ... ,,	2	10	6
12 in. × 3 in. Plain coping, twice throated ... ,,	1	19	0
12 in. × 3 in. Weathered and twice throated coping ,,	2	12	0
14 in. × 6 in. do. do. ... ... ,,	2	7	0
4½ in. × 9 in. Plinth, rubbed on top and face ... ,,	2	2	0
3 in. sawn two sides Slabs, random sizes ... ... per ft. sup.		7	6
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ... per ft. cube	1	5	9
Do. do. fair one edge for fair faced brickwork	1	10	6
Hard York—			
12 in. × 2 in. Square Steps, rubbed on top and edge per ft. run		9	0
14 in. × 3 in. Round-nosed Steps, rubbed on top and front ... ... per ft. cube	2	8	0
12 in. × 6 in. Plain Steps, rubbed top and front ... ,,	2	2	0
2 in. Rubbed and Jointed Paving, given sizes ... per ft. sup.		8	6
2 in. Sawn Paving, edges squared, in random sizes per yd. sup.	2	19	3

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000			
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	8	0
Hand-made Pantiles Berkshire district	50	9	0
Hand-made Double Roman Bridgwater district	58	13	6
Hand-made 10½ × 6½ tiles Berkshire district	14	1	6
Machine-made 10½ x 6½ Staffordshire district	13	18	9
Hand-made Hip and Valley tiles per doz.	1	10	0
Machine-made Hip and Valley tiles do.	1	8	0
Concrete tiles 10½ × 6½	7	14	6
do. Interlocking (49S)	18	9	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual			
24 × 12	124	17	4
22 × 12	103	13	8
22 × 11	93	13	6
20 × 12	88	9	0
20 × 10	82	7	9
18 × 10	59	12	9
18 × 9	52	14	6
16 × 10	49	1	3
16 × 8	38	3	8

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—						
Joinery quality	Ex. Wharf	per standard	£110 to £135			
Carcassing quality	do.	,,	£98 to £102			
1 in. Tongued and Grooved Flooring	do.	,,	£108	0	0	
Hardwood—						
Mahogany—African S.E. ...	do.	per ft. cube	1	10	0	
do. Honduras do. ...	do.	,,	3	5	0	
Oak European do. ...	do.	,,	2	5	0	
do. Japanese do. ...	do.	,,	2	10	0	
do. English Logs sawn ...	do.	,,	1	17	6	
Teak 8 in. average S.E. ...	do.	,,	3	15	0	
Walnut African Logs sawn ...	do.	,,	1	5	0	

DOORS (in Lots I-II)

Delivered London area.	£	s.	d.
1½ in. 4 Horizontal Panel Pattern 4 in. deal			
2 ft. 0 in. × 6 ft. 6 in. ... ... each	1	12	0
2 ft. 3 in. × 6 ft. 6 in. ... ... ,,	1	13	0
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	1	14	0
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	9	0
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	11	6
2 in. Panel, top panel open. Pattern 2 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	1	9
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	3	6

SUNDRIES

Delivered London area.			
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ... ... per yd.		5	8
1½ in. do. (67 yds. to 1 ton) ... ... ,,		7	4
2 in. do. (52 yds. to 1 ton) ... ... ,,		8	11½
2½ in. do. (45 yds. to 1 ton) ... ... ,,		10	3
3 in. do. (39 yds. to 1 ton) ... ... ,,		11	5½
Quantities under 1 ton add 1d. per ½ in. of thickness.			
½ in. imported insulation Board, quantities over 5,000 sq. ft. per 100 sq. ft.	2	2	6
¼ in. Hardboard do. ... ... ,,	2	1	6
⅜ in. do. do. ... ... ,,	3	2	6
1/16 in. Asbestos Flat Building Sheets ... per yd. sup.		3	5
¼ in. do. ... ... ,,		4	7
Roofing Felt, 1-ply ... ... ,,		1	6
do. 2-ply ... ... ,,		1	9
Best Scotch Glue in slabs ... ... per ½ cwt.	5	0	0
do. pearl ... ... ,,	5	5	0
Croid Glue ... ... 28 lb.	2	6	0
Cut Nails 3 in. (1-ton lots) ... ... per ton	62	10	0
do. 4 in. and up (1-ton lots) ... ... ,,	59	0	0
Wire Nails, 3 in. (4-cwt. lots) ... ... per cwt.	3	0	9
do. 4 in. and up (4-cwt. lots) ... ... ,,	2	16	11

METALS

STEEL JOISTS, ETC.

Basis Joists—			
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area ... ... per ton	41	0	0
Extra for sizes			
3 in. × 1½ in. 4 in. × 1¾ in. ... ... ,,	3	10	0
3 in. × 3 in. ... ... ,,	2	10	0
4 in. × 3 in., 10 in. × 4½ in. ... ... ,,	1	10	0
5 in. × 2½ in., 5 in. × 3 in. ... ... ,,	1	15	0
4¾ in. × 1⅞ in. ... ... ,,	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. ...per ton		15	0
6 in. × 3 in. 24 in. × 7½ in. ... ... ,,	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. ... ,,	1	5	0
9 in. × 4 in. 10 in. × 5 in. ... ... }			
12 in. × 5 in. 22 in. × 7 in. ... ... }	1	0	0
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in. }			
14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in. }			
15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. } ,,		10	0
16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in. }			
18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in. }			
Steel angles average price ... ... ,,	42	15	0
Steel tees average price ... ... ,,	43	15	0
Fabricated work delivered London—			
R.S. Joists cut and fitted ... ... ,,	57	10	0
Compound girders ... ... ,,	63	5	0
Stanchions ... ... ,,	68	10	0
Compound stanchions ... ... ,,	72	10	0
In Roof Work—Trusses and Purlins ... ... ,,	85	5	0
Average prices not for awkward work.			
Angle cleats and ⅝ in., ¾ in. and ⅞ in. bolts average price London area ... ...per cwt.	4	15	0

FERRO-CONCRETE BARS

Mild Steel Ferro-Concrete bars to BSS785 ex London			
Stock ⅜ in. diam., and upwards ... ... ,,	42	8	6
¼ in. diam. ... ... per ton extra	4	7	0
5/16 in. do. ... ... ,,	3	7	0
⅜ in. do. ... ... ,,	2	9	6
½ in. do. ... ... ,,	1	12	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A + 7½%		
Class B + 18½%	Light + 32½%	Malleable List—32½% + 40%
Class C + 35½%	Heavy + 40%	
Black—		
Class A − 14½%		
Class B − 2½%	Light + 19½%	Malleable List—32½%
Class C + 11¼%	Heavy + 27½%	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/5½	3/2	/11
3½ in.	3/10½	3/5	/11
4 in.	4/11½	3/10	1/4
4½ in.	5/5½	4/4	1/7
5 in.	6/1	4/8	1/11

METALS—*continued*

C.I.O.G. Gutters

	Gutters	Nozzle	Stop Ends
3 in.	4/7	4/1	1/1
3½ in.	5/1½	4/1	1/4
4 in.	5/8	4/4	1/7
4½ in.	6/1	4/11	1/11
5 in.	6/8	5/8	2/2

C.I. Rain-water Pipes

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	7/7	3/10	5/7
2½ in.	7/7	4/4	7/5
3 in.	8/6	5/5	8/1
3½ in.	9/8	6/4	9/8
4 in.	11/2½	7/9	11/6

L.C.C. Coated Soil Pipes

2 in.	8/7½	6/8	8/1
2½ in.	9/0½	7/4	10/1
3 in.	10/2	8/1	11/11
3½ in.	11/4½	10/1	13/11
4 in.	12/1½	11/3	16/5

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated February 1, 1955, plus 7½% and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. Coated Drain Pipes

	In 9-fts. cwt.	qr.	lb.	per yd.	Bends	Branches
4 in.	1	1	17	27/4	19/3	34/-
6 in.	2	0	1	40/9	51/-	81/9

Asbestos Rain-water Pipes and Fittings

All less 17½ per cent. discount.

	2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths ... per yd.	3/9	4/-	4/10	6/5
Shoes ... ... each	2/5	2/8	3/2	4/3
Single Branches ... ... ,,	3/9	4/6	5/4	7/6
Bends square or obtuse ... ,,	2/6	2/11	3/9	5/4
Swan Necks 4½ in. proj. ,,	2/11	3/9	4/5	5/11
do. 6 in. do. ,,	3/2	3/9	4/10	6/5

Asbestos O.G. Gutters and Fittings

	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths ... per yd.	3/7	3/11	4/8	5/7½
Drop ends ... ... each	2/10	3/4	3/10	4/7
Stop Ends... ... ... ,,	/10	/11	1/-	1/2
Angles ... ... ,,	2/11	3/5	4/1	4/10
Nozzles ... ... ,,	2/10	3/4	3/10	4/7
Union Clips ... ... ,,	1/5	1/8	2/1	2/5

Asbestos Half-Round Gutters and Fittings

	3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths per yd.	2/6	2/11½	3/0½	3/7	5/-
Drop ends ... ... each	2/1	2/5	2/8	2/11	4/3
Stop ends ... ... ,,	/9	/10	/11	1/-	1/2
Angles ... ... ,,	2/5	2/8	2/11	3/2	4/3
Nozzles ... ... ,,	2/1	2/5	2/8	2/11	4/3
Union Clips ... ,,	1/-	1/1	1/2	1/4	2/-

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	45 7 6
Mild Steel Bars	39 16 6
Mild Steel Hoops	41 3 6
	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	52 8 6
24 gauge	54 18 6
26 gauge	57 18 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	59 9 0
24 gauge	62 19 0
26 gauge	68 4 0
Galvanised flat sheets C.R. and C.A.—	
20 gauge	60 19 0
24 gauge	64 9 0
26 gauge	69 14 0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base prices)		£ s. d.
Sheet BS 1470 SIC 18 SWG (36 in. wide) ...	per lb.	2 7½
Sheet BS 1470 N 53 Utility 18 SWG (36 in. wide)	,,	2 4½
Coiled strip BS 1470 S1C 18 SWG (24 in. wide) ...	,,	2 6½
Coiled strip BS 1470 NS 3 Utility 18 SWG (24 in. wide)	,,	2 4
Coiled strip for flashing 99.7% purity 22 SWG (12 in. wide)	,,	2 9
Corrugated sheet BS 1470 NS 3 Utility Circular Profile 8 ft. × 32 in. × 20 SWG	per sheet	1 8 6
Corrugated sheet BS 1470 NS 3 Utility Industrial Profile 8 ft. × 31⅓ in. × 20 SWG	,,	1 13 9
Corrugated sheet BS 1470 NS 3 Utility Mansard Profile 8 ft. × 31⅓ in. × 20 SWG	,,	1 7 8
Extruded section BS 1476 E1C simple moulding ...	per lb.	2 5
Extruded section BS 1476 E1C 1 in. diam. round ...	,,	2 2½
Extruded section BS 1476 HE10WP simple angle ...	,,	2 8
Extruded section BS 1476 HE10WP 1 in. diam. round	,,	2 7
Tubing BS 1471 T1C 1½ in. O/D × 20 SWG ...	,,	3 11½
Tubing BS 1471 HT10WP 1½ in. O/D × 20 SWG ...	,,	5 2

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

All per doz.	M.O.H. ½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	87/-	128/8				
Toilet bib cocks for iron ...	109/-	158/5				
Screwdown stop cocks for iron	66/-	95/9	188/-	363/-	522/6	917/6
do. with two unions for lead	89/-	132/-	234/4	472/-	623/6	1389/6
Double nut boiler screws ...	18/8	26/5	47/6	48/6	67/-	93/6
Heavy Croydon ball valves ...	77/-	193/6	312/5	568/8	734/10	—
Plumbers' union brass lead to iron	19/6	23/6	38/6	52/10	70/6	165/-
	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	33/-	40/8	59/6	92/5	118/10	155/3
Brass sleeves		31/11	31/11	56/2	74/10	91/5
	1¼ × 6 lb.		1½ × 6 lb.	2 × 7 lb.		3 × 7 lb.
Lead P. trap with brass cleaning screws	65/5		81/9	130/10		223/6
Lead S. trap do.	79/-		98/1	160/10		288 10

Solder		s. d.
Plumbers'	per lb.	3 8
Tinmen's	,,	4 5
Blow pipe	,,	4 6

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 41½d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.		d.
⅛ in. × 19 gauge	12⅞	Total per lb	54½
¼ in. × 19 ,, ...	11½	,, ,,	52⅝
⅜ in. × 18 ,, ...	9⅝	,, ,,	51⅛
½ in. × 18 ,, ...	9	,, ,,	50½
⅝ in. × 18 ,, ...	9	,, ,,	50½
¾ in. × 17 ,, ...	10⅝	,, ,,	52⅛

		£ s. d.
Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras	per ton	396 15 0

Zinc

Sheet Zinc	10 gauge (25 SWG)	5 cwt. lots upwards	per cwt.	8 11 6
do.	12 gauge (23 SWG)	,, ...	,,	8 9 9
do.	14 gauge (21 SWG)	,, ...	,,	8 8 9

Brass Tubes

		d.
Brass tubes basic price, plus gauge and manufacturing extras	per lb.	2 8⅞

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

		£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	143 5 0
Lead Water Pipe in coils	,,	144 10 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. ...	,,	146 0 0
do. over 4 in. dia.	,,	148 0 0
Lead Gas or Untinned Compo pipe	,,	146 0 0
Extras over Basis for quantities under 1 ton		
5 cwt. and under 1 ton	per cwt.	2 0
3 cwt. do. 5 cwt.	,,	4 0
1 cwt. do. 3 cwt.	,,	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £99 0s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

			£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site		per ton	7 11 9
do. White	do. do. ...	,,	7 19 6
Sirapite Coarse	do. do. ...	,,	7 16 9
do. Fine	do. do. ...	,,	8 4 9
Blue Lias Lime in 6-ton loads		,,	6 14 6
Hydrated Lime do.		,,	5 17 6
Lump Lime do.		,,	5 7 0
White Keen's or Parian Cement in 1-ton loads ...		,,	10 17 0
Pink Keen's or Parian Cement in 1-ton loads ...		,,	10 11 9
Granite Chips in 6-ton loads		,,	2 7 3
Hair		per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... 1,200 yds.		per yd. ,,	2 3½ 2 2½
Do. Insulating do. ½ in. thick 600 yds. and over in one delivery. Delivered site ... ... 1,200 yds.		per yd. ,,	2 11½ 2 10¾
Gypsum Plaster Wall Boards, 3 and 4 ft. wide 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery. Delivered site ... ... 1,200 yds.		,, ,,	2 6½ 2 5¾
Do. Insulating do. ½ in. thick 600 yds. and over in one delivery. Delivered site ... ... 1,200 yds.		,, ,,	3 2½ 3 1¾

PAINT AND DISTEMPER

		£ s. d.
Delivered London area		
Ceiling Distemper	per cwt.	1 7 6
Washable Distemper	„	5 5 0
Gloss Paint	per gal.	2 10 0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3 11 0
LEAD PRODUCTS AND OILS		
Ground White Lead, 1 cwt. kegs	per cwt.	8 18 0
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3 2 0
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	7 2 0
Genuine Linseed Oil Putty, 1 cwt. keg	„	2 13 0
Size XD quality, 28 lb.	per tin	9 0
Raw Linseed Oil (5 gal.) drums extra	per gal.	12 0
Boiled Linseed Oil (5 gal.) do.	„	12 5
SUNDRIES.		
Turpentine substitute (5 gal.) drums extra	„	5 6½
do. do. (40 gal.) do. do.	„	4 8½
Solignum, Brown (5 gal. cans) Exterior	„	6 10
Creosote (40 gal. barrels)	„	2 0
Paste Powder (1 lb. packets)	per lb.	1 6
White Lining Paper	per piece	1 0

VARNISHES, etc.

Delivered London area.		
Oak Varnish, Outside or Inside	per gal.	1 12 6
Oak Pale Copal do.	„	1 18 0
Hard Drying Oak for Inside	„	2 0 0
Crystal Paper Varnish do.	„	2 0 0
Eggshell Flat Varnish do.	„	2 14 0
Finest Carriage Varnish	„	2 10 0
Front Door Varnish	„	2 0 0
Japan Gold Size	„	1 12 6
Black Japan	„	1 14 0
Brunswick Black	„	1 10 0
Berlin Black	„	1 5 0
Terebene	„	1 8 0
Knotting (1 gal, bottles free)...	„	2 2 0
French and Brush Polish (do.)	„	1 18 0

GLASS

Delivered London area.	Per ft. super s. d.
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	5⅞
24 oz. „ „ „ „ „ „	7⅞
26 oz. „ „ „ „ „ „	10
32 oz. „ „ „ „ „ „	1 1
⅛ in. Rolled Plate	9
3/16 in. and ¼ in. Rough Cast	1 0
⅛ in. Figured Rolled and Cathedral, Standard patterns: White	9
do. Standard Tints	1 4½
do. Special Tints	2 9
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 1
¼ in. Wired Cast	1 2
¼ in. Georgian Wired Cast	1 2½
Hollow Glass Blocks—	Each
P.B.2 5¾ × 5¾ × 3⅞ in.	2 9
P.B.3. 7¾ × 7¾ × 3⅞ in.	4 2
P.B.32 7¾ × 7¾ × 3⅞ in.	4 2
Radiused Corner Blocks to match up with—	
P.B.2	5 3
P.B.3	6 9
P.B.32	6 9
¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
„ „ „ 5 ft. sup.	4 5
„ „ „ 45 ft. sup.	5 1
„ „ „ 100 ft. sup.	5 6
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality —Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup. or ditto	11 3
Not exceeding 200 ft. sup. or ditto	16 0
Plates exceeding 200 ft. sup., prices on application.	
Substances other than ¼ in. Polished Plate at Special Prices.	

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. sup. s. d.
18 oz. sheet O.Q.	3,000	4½
24 oz. „ „	2,000	6½
26 oz. „ „	2,000	7½
32 oz. „ „	2,000	10½
⅛ in. Rolled Plate	1,000	7½
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	7½
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte...	1,000	10½
3/16 in. and ¼ in. Rolled Plate or Rough Cast ...	2,000	10½
¼ in. Wired Cast, Hexagonal...	2,000	11½
¼ in. Georgian Wired Cast	2,000	1 0½

LAND RECLAMATION

TPI Paper

A PAPER on "Land Reclamation after Surface Mineral Workings" was given by PROFESSOR S. H. BEAVER, MA, FGS, FRGS, at a general meeting of the Town Planning Institute at Livingstone Hall, SW1. Mr. Ernest H. Doubleday, OBE, was in the chair. The conclusions arrived at by Professor Beaver in his paper are given below:

Surface mineral working is now more important in Britain than it has ever been before, and the level of production, and so of land consumption, shows every sign of increasing rather than decreasing. The development of the new road programme is bound to have immediate repercussions, the iron and steel industry looks forward to greater outputs, and the need for coal is such that there can clearly be no immediate abandonment of opencast mining. The problems of reclamation are also likely to increase, therefore, quite apart from the back-log of past dereliction which has to be dealt with.

The public conscience has been awakened to the alarming progress of the excavations but there is no doubt also that, quite apart from any planning compulsions which may now be applied, the mineral industries as a whole are very conscious of their social obligations. There has been quite a revolution during the last 15 years not only in attitude of mind but also in technique, as well as in the degree of Government control.

The technical problems of land reclamation would appear to be largely solved. The economic problems of ironstone and opencast coal have also been overcome, partly, of course, through the technical efficiency of the new machines, and partly by Government regulation.

If the Waters Committee's suggestion for an After-Treatment Fund is adopted, the economic problem of past dereliction in the gravel industry, and the cost of nursing reclaimed land back into agricultural production, might also be overcome. It is true, of course, that we still have no economic solution for the wet gravel pits which are beyond the range of filling materials, but even so, if ironstone, coal and most of the gravel can be successfully dealt with, that means in effect, nearly four-fifths of the annual land consumption by surface mineral working. As for the rest, they are mostly Type 3 quarries in which relatively little reclamation can be done anyway.

We have to live with our mineral industries, and minerals must be worked, economically, in the places where Nature has put them. It is no good hedging them round with petty and frustrating restrictions, or imposing restoration conditions which are impossible to fulfil and which merely bring the planning machine into disrepute.

A vote of thanks to Professor Beaver was proposed by Sir Arnold Waters, seconded by Dr. G. P. Wibberley, of Wye College.

Dealing with a number of questions, Professor Beaver pointed out that one of the difficulties about filling wet gravel pits up to the water level was that water levels fluctuated in relation to rainfall and the level of the river. Consequently, they would be in some danger if the pits were filled to about the water level. He could give no answer as to the precise level one should stop at—this depended largely on physical circumstances. It would be advantageous if the hard core could be put back first. He knew of examples where this had been done; it was a question of organisation.

Professor Beaver stressed that it was always important to ensure in advance what was intended to be done with the reclaimed land. It was no good changing one's mind after a decision had been made. If the land were to be restored for agricultural purposes, it was necessary that the top soil be put back on top. However, this would be unnecessary if a factory were to be built on the site. The question of creating a "filling materials fund" to be used in connection with reclamation work had been discussed by the Waters Committee, but it was felt that this would create more problems than would be solved.

With regard to re-designed landscapes, Professor Beaver said this work had been undertaken in a number of important instances. There were various firms who carried out that sort of work. The Ballast, Sand and Allied Trades' Association also gave advice on the subject.

MONOPOLIES APPOINTMENT

The chairman of the Monopolies and Restrictive Practices Commission has appointed Mr. Brian Davidson to take the place of Mr. C. E. Wrangham on the group recently appointed to deal with the metal windows inquiry.

The Builder Review of PLANT & MATERIALS

THE USE of a type "R" mobile crane supplied by R. H. Neal and Co., Ltd., Plant House, Ealing, W5, is understood to have reduced the time taken to install the letters "BOAC" on this new hangar at London Airport from about 1½ days to just over one hour. Fitted with a 75 ft. lattice jib, the 10-tons capacity crane was hired on site from W. & C. French, Ltd., the contractors for the hangar, and the 10-ft. letters, weighing between 4 and 5 cwts. each, were raised and fixed with bolts into pre-drilled holes to within limits of 1/16 in. The use of the crane also enabled the sign manufacturers, Claude-General Neon Lights, Ltd., to fit the tubing and high tension equipment at their factory, and to deliver the letters to the site as complete units.

CHIPBOARD PLANT IN SWEDEN

A BRITISH chipboard plant for the manufacture of resin-bonded chipboard by the "Bartrev" continuous process, similar to that operated by Vere Engineering Company, Ltd., at Marks Tey, in Essex, has been ordered by a Swedish firm, Hylte Bruks AB, for erection in Southern Sweden. This plant can produce as much as 20,000 tons of board per annum from wood shavings or pulp wood, or from other fibrous materials. In planning the layout of the factory, provision has been made for a second Bartrev press, which will follow when the first is in production. The preparatory work is already in progress and the plant will be in operation in 1956. Further information from International Plastics, Ltd., 3, Vere-street, W1.

FIRE SURROUNDS

A new range of tiled fire surrounds has been placed on the market by George Woolliscroft and Son, Ltd., and details can be obtained from the company at 68, Victoria-street, SW1.

AMERICAN WATER COOLERS

An agreement for the production of water coolers has been entered into by Heenan and Froude, Ltd., of Worcester, and the Marley Co., of Kansas, USA. The British company, as exclusive licensees, will manufacture coolers for practically all countries outside North and South America. These will be of Marley design with slight modifications for British requirements. The first models to be marketed will be the single-flow "Aquatowers," to be followed by larger types. The "Aquatower" range covers both low and high temperature cooling, and the single-flow model, which operates on the induced draught cross-flow principle, is designed to reduce running costs. The advantages of "Aquatower" coolers are understood to include their low fan power, reducing electricity costs, and their low height, facilitating installation in confined spaces. All components are protected against corrosion. The Heenan "P" type forced-draught cooler will continue to be manufactured by the company.

NEW HOLDING COMPANY

On August 29 an extraordinary general meeting will be held at Worcester to change the name of the parent company of the Heenan and Froude group from Heenan and Froude, Ltd., to Heenan Group, Ltd. It is intended that Heenan Group, Ltd., will be the holding company while Heenan and Froude, Ltd., will be re-registered as a subsidiary entirely devoted to manufacturing activities.

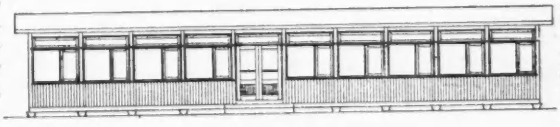
BBC TEMPORARY STUDIO

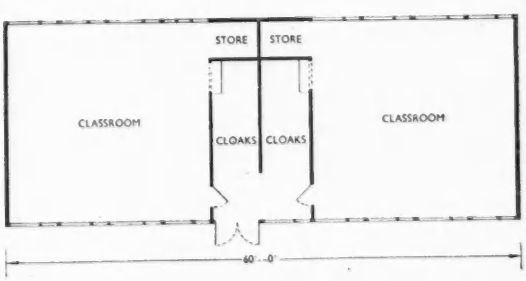
A feature of the National Radio Show, opening at Earls Court on August 24, will be a temporary studio from which sound and TV broadcasts can be made. The special problems connected with this structure, of which shortness of time was only one, have decided Mr. Ian Jeffcott, LRIBA, the exhibition architect, who is also acting for the BBC in this matter, to use steel scaffolding. The studio will be 130 ft. long, 76 ft. wide and 27 ft. high, and the construction will be steel scaffolding supplied by the Steel Scaffolding Co., Ltd., infilled with soundproof and flameproof panels. Spanning the acting area will be four welded tubular beams and a catwalk box girder supported on tubular columns and wall framing. The tubular steel framing must carry a heavy load of lighting equipment. All the scaffolding work is being carried out by the company with their "Big Ben" equipment, as sub-contractors to Earls Court, Ltd.

CHANGES OF ADDRESS

The sales office of the paints division of Burt, Boulton and Haywood, Ltd., has been transferred to their works at Crabtree Manorway, Belvedere, Kent (Tel.: Erith 3066).

The Atlas Diesel Co., Ltd., Wembley, Middlesex, have moved their Bristol branch to larger premises at 47A, Zetland-road, Bristol 6 (Tel.: Bristol 45036/7). The branch manager is Mr. W. J. Clarke.





THE TRANSPORTABLE CLASSROOM produced by Medway Buildings and Supplies, Ltd., Rochester, Kent, is a prefabricated timber structure based on a 6 ft. module, with interchangeable partitions. Blocks of up to three units complete with cloakrooms and ancillary accommodation can be supplied, together with an electric forced-air heating system. The outer walls are of mahogany or western red cedar, and the floor can be solid or suspended on stump foundations. It is understood the structure can be easily dismantled and re-erected; and a low pitched, attractively coloured roof with wide eaves is provided. The classrooms are a variation of the Mark IV school building system recognised as permanent by the Ministry of Education; adaptations having been made to reduce site work during their initial construction.

J

SPRAYING ASBESTOS

A contracting department under the name of "Asbestospray" has been established by William Kenyon and Sons, Ltd., of Dukinfield, for the spraying of asbestos in constructional work. The firm employ a mixture of asbestos and other fibres to their own specification, and the work is first treated with a rubber-based primer and the fibre is then sprayed on, using both water and compressed air through the medium of a specially designed gun. Most building

materials are suitable for the application of this process, though it is particularly adapted to the protection of exposed roof trusses and other steel work. Surfaces treated with "Asbestospray" can be floated smooth for any colour decoration. Its advantages include the absence of joints in the finished surface and the levelling of irregularities, while the process is useful as a fire-resistant form of insulation and an anti-condensation medium.

SHARPENING MACHINE

A sharpening unit for woodworking planing machines, claimed to set and sharpen each cutter within a fraction of 0.001in. at a speed of 1in. per second, is being produced by E. and D. Burgess, 15, Oakleigh Park South, Whetstone, N20. The sharpening stone revolves at a high speed to obtain a clean cut, and the grinding wheel, of the cupped type, can be lowered on to the cutter blade by a knurled knob, clearly marked in 0.0005 of an inch. The machine consists of two adjustable ground rails which take their bearing on the cutter block. A small extendible tongue positively locates the machine to the cutter blade, and the sharpening machine is set on the cutter block, the electric current switched on and the machine pushed the length of the block. After sharpening one blade, the cutter block is turned until the next blade appears. This process is repeated on each blade.

PERSONAL COLUMN

Eastwoods, Ltd., have announced that MR. JOHN PAISLEY, MIMechE, and SIR GILBERT DAVIS, Bart, AMIChemE, have been appointed assistant managing directors to reinforce the production and engineering development of the group in view of the continued expansion of its manufacturing interests. Both are present members of the parent board.

MR. J. A. F. VICKERS, who joined Builders and Domestic Suppliers (Midlands), Ltd., as heavy goods buyer, has been appointed commercial manager to control national sales liaison throughout the British Isles.

MR. GEOFFREY E. SMITH, chief sales engineer for Whitlock Bros., Ltd., will leave for a two months' tour of Africa at the end of September. The purpose of Mr. Smith's journey will be the demonstration of the "Dinkum Digger" excavator and trencher, and the appointment of new agents.

British Insulated Callender's Cables, Ltd., announce the appointment, as from September 1, of MR. E. WATT as their branch manager in Chester.

NEWS IN BRIEF

AGGREGATE FOR CONCRETE

The Central Electricity Authority and the Cementation Co. have completed an agreement whereby the latter will take over the whole output of fly ash—some 65,000 tons a year—produced by pulverised fuel boilers at the Authority's Battersea power station. The ash will be converted into a light-weight aggregate under the "Sinterlite" process developed by F. P. Somogyi.

CONTINENTAL ORDER

To avoid a delay in starting the building of the new Alperton secondary modern school on Bowrons Farm, Middlesex County Council is to buy £750 worth of steel from a Continental firm.

ADA DIRECTORY

The 1955 edition of the Aluminium Development Association directory of members has just been issued. The directory gives the names of the members of the council, a brief statement of the constitution and objects of the Association and the names, addresses and other particulars of its member companies including where applicable associate or subsidiary companies. In each case a short description is given of the activities and products of the company. By means of an index of products classified under aluminium and aluminum alloys readers are referred to all member companies producing any particular product.

PAINT TECHNOLOGY COURSES

A large quantity of modern apparatus has been obtained for the Paint Technology Section of the Borough Polytechnic, as the result of a recent appeal to the paint trade and ancillary industries by the Borough Polytechnic Old Students' Association. To provide an opportunity for the inspection of this new equipment, the Department of Chemistry and Food Technology, of which the Paint Technology Section forms part, will welcome industrial visitors in the week commencing September 12. The official opening of the new laboratories will be carried out by Mr. Malcolm McCorquodale, Baron-designate, and staff members will meet visitors and discuss the courses offered, which include full-time courses for graduates.

FLATS PROGRAMME

Opening Stockton's first block of three-storey flats at Portrack recently, Ald. A. Ross, vice-chairman of the Corporation housing committee, said the council was seeking to achieve a compromise that would appeal to those who were against the sky-scraper type of building and those who felt land was being used to the best advantage. The Corporation decided to embark on a programme of flat development in association with housing development 12 months ago, and up to now 29 blocks, each containing six flats, are under construction. Future programmes will depend on the reception the flats receive from tenants.

STANLOW LAND RECLAMATION

Work is in progress at Stanlow oil refinery, Cheshire, on straightening the River Gowy which flows through the site, under the Manchester Ship Canal, and into the estuary of the River Mersey. The winding 3,250 ft. of the river within the refinery is being shortened by 1,000 ft. by cutting across the river loops. Begun in March this year, the operation is scheduled for completion early in 1956, and the total cost is estimated to be £150,000. The planned reduction in width, together with the straightening of the river, will enable the Shell Petroleum Co. to recover some 11 acres of land—the excavation being carried out by dragline excavators. In all some 40,000 cu. yds. of alluvial mud, clay, and peat will have to be dug out and about 70,000 cu. yds. of material brought in before final grading of the area can be completed.

THE
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A full Technical Review of the whole subject prepared by a committee of Architects and Heating Engineers appointed by The Central Council for the Care of Churches

Published for
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"PRICE RINGS"
Birmingham Builders Vindicated

BIRMINGHAM CORPORATION had no evidence that the city's builders were "getting together" and discussing prices and contracts before they submit tenders for house building, said ALD. A. F. BRADBEER, chairman of the City Council's house-building committee, on August 9. He was commenting on a suggestion of the Ministry of Works that firms following any practices criticised by the Monopolies Commission should be removed from local authorities' lists of contractors.

He said that at the moment it was his firm opinion there was no evidence of collusion between Birmingham builders to distribute work among themselves. "In fact," he added, "we are often surprised at the big difference between some tenders for medium and small contracts. Tenders for larger contracts are keen and competitive."

OVERSEAS BUILDING

From Our Own Correspondents

AUSTRALIA.—A £1m. radar station is to be built at Sydney. It is expected to be completed in a short time. . . . One of the most ambitious hydro-electric projects yet attempted in the Pacific Islands will be started soon in New Caledonia. The project involves enlarging a dam already built on the Yate River in south-eastern New Caledonia to provide a cheaper source of power for treating the island's nickel ore. A big French company has been given the job of making the Yate River dam about five times larger, at a cost of £7m. The company has already sent technicians to New Caledonia, and work on the dam should begin early next year.

The Utah Construction Company, an American firm now registered in Australia, is to construct a large munitions factory at St. Marys, near Sydney. The factory will cost £23m. and will take some years to complete. The Utah Construction Company recently completed the Big Eildon Dam in Victoria.

The Allied Foundries Company Group are building what is claimed to be the biggest and most modern iron foundry of its type in the world. The site is near Melbourne and covers an area of three and a half acres. . . . The huge oil refinery being built at Kurnell on the shores of Botany Bay, near Sydney, is almost ready to go into production. This is the fifth refinery which has been built by Australian Oil Refining Company at a cost of £25m. It is interesting to note that all Australia's refineries have been established since the end of the last war, and that altogether they have cost more than £100m. to build. The oil refining industry has huge potential in Australia and there is every likelihood of additional building during the next 10 years.

CANADA.—A request by the Imperial War Graves Commission to build a war memorial to overlook the Ottawa River, near the Canadian Government House in Ottawa has been approved by the Canadian Government. The memorial will commemorate the airmen of British, Australian, and New Zealand nationality who died in Canada during the war, and who have no known graves.

EGYPT.—Included in the Egyptian supplementary budget for 1955-56 for National Production Council projects is £2,800,000 for preliminary work on the High Aswan Dam scheme. This is for construction of roads and railways and the building of housing for employees and workmen.

The foundation stone was laid recently of a small new Government topping plant to be constructed at Mostorad, just outside Cairo, in connection with the 130 km. pipeline for fuel and diesel oils from Suez, now under construction by an Italian group. . . . . A project to link Egypt by road with other Arab states is being studied. This will probably be commenced by building a 500 km. road from El Shatt, opposite Suez, to Charm El Cheikh, at a cost of £2½m. From the latter point a road will later be constructed to the Gulf of Akaba, and Saudi Arabia will thus be the first of the Arab States to be linked by road to Egypt.

Some idea of the vast building work to be undertaken in Egypt can be obtained by studying the principal items in the National Production Council Budget. In addition to the High Aswan Dam project, some £2m. is to be spent on the Aswan Fertiliser project; £½m. is to be spent on grain silos, and well over £18m. on irrigation and drainage projects. The large sum of £11,900,000 is allocated for communications projects, and £4,900,000 is to be invested in the construction of oil refineries and pipe-lines.

In addition, under the Social Services Budget, £12½m. has been set aside for the completion of existing projects, £3,900,000 is to be allocated for the establishment of new combined health and social centres, £½m. is to be spent for the building of workers' houses, the same for houses for civil servants, and £300,000 will be invested in sports and youth centres.

OTTAWA.—Volume of new houses constructed under the National Housing Act showed a sharp increase of 44.5 per cent. for the first six months of this year over the corresponding period for 1954. Central Mortagage and Housing Corporation reported that undertakings to insure were issued for 28,062 loans valued at 312,123,349 dollars between January 1 and the end of June compared with 17,011 loans worth 196,857,288 dollars last year. Financing in the first half of this year provided for construction of 32,498 housing units as against 22,479 in 1954. Loans for home-ownership accounted for 28,472 units and rental loans for 4,026.

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**USA.*—Messrs. Bowen Company, 1120, North Appleton-street, Baltimore, have told the British Consulate at Baltimore that they are interested in getting in touch with UK manufacturers of enamelled plumbing equipment. They specifically wish to take on a line of pressed enamel, steel and cast iron enamelled laundry tubs measuring 48 in. long, 44 in. wide and 12 in. deep, approximately, for use in homes and industry.

Mr. Taylor Cook, manager of the firm, says that his company would be glad to take on the agency of a suitable manufacturer provided their prices were competitive, quality passable and delivery dates reasonable.

Manufacturers interested in this agency inquiry should write by air mail direct to the US concern. Telephone inquiries to Chancery 4411, Ext. 776, quoting ref. ESB/16466/55.

**USA.*—Angelina Hardwood Sales Co., Wilson-avenue, Lufkin, Texas, have told the British Consulate-General at Houston that they are interested in importing from the UK hardwoods of thicknesses from 1 in. to 2 in. and especially mahogany. The firm wish to import for their own account, terms of payment to be arranged. Firms interested in this inquiry should write direct to the Angelina Hardwood Sales Co., by air mail quoting prices c.i.f. Houston in US dollars. Telephone inquiries to Chancery 4411, Ext. 776, quoting ref. ESB/16867/55.

TRADE COMMISSIONERS IN CANADA

The Board of Trade have announced that Mr. C. G. Cruickshank, formerly a UK trade commissioner at Colombo, has been appointed trade commissioner, grade I, in Ottawa in succession to Mr. K. D. Rogers, who is returning to duty in this country.

Mr. D. Simpson, at present serving in industries and manufacturers division, BOT, is to replace Mr. M. R. Garner in Ottawa as trade commissioner, grade II.

In Toronto, the position of trade commissioner, grade II, is to be taken over by Mr. G. Booth, at present serving in commercial relations and exports department, BOT. He succeeds Mr. N. L. Hibbs.

AUSTRALIAN CEMENT

Mr. Halford Reddish, chairman of the Rugby Portland Cement Co., Ltd., has announced that the company's subsidiary in Western Australia, Cockburn Cement Pty., Ltd., is now in operation and began deliveries of cement on August 15. The kiln, fired by oil, has a capacity of 120,000 tons per annum.

ARCHAEOLOGICAL DISCOVERIES

During the excavation of the Nagarjunakonda site in Andhra State, India, where a dam is to be built as part of the Nandikonda irrigation and power project, archaeologists have unearthed ancient Buddhist congregational halls, monasteries, shrines and stupas. They are now busy trying to remove relics from the site before the dam is completed. The project, which will cost Rs. 1,220 million will take nine years to complete and will irrigate three million acres.

NEW RAIL LINK, RHODESIA

* United Kingdom exporters may be interested to know that the new rail link

* From the Board of Trade Special Register Information Service.

between the Federation and Lourenco Marques has now been opened. The new line runs from Lourenco Marques through Pafuri, on the Southern Rhodesian/Mocambique Border, to Bannockburn where it connects with a previously existing branch line which joins the Bulawayo/Salisbury line at Somabula, just south of Gwelo.

For goods traffic, the rates between Lourenco Marques and Somabula and all points west of Somabula will be the same as the rates from Beira to those points, via Umtali and Salisbury. This means in effect that the rates to Bulawayo and all other points on the line from West Nicholson passing through Bulawayo and serving all Northern Rhodesia will be the same whether the goods are railed from Beira or Lourenco Marques. For points east of Somabula, however (going in the direction of Beira along the Somabula-Gwelo-Salisbury-Umtali-Beira line), the rates will be the Lourenco Marques-Somabula rate enhanced for mileage east of Somabula, i.e., they will be greater than the rates to these points from Beira.

The choice between off-loading goods for the Federation at Lourenco Marques or Beira will obviously depend on many factors, not the least of which is the difference in the handling charges at these two ports. For some commodities they are lower at Lourenco Marques than at Beira and vice versa for other commodities.

In announcing the rates for the new line, the Minister of Transport and Communications (Sir Roy Welensky) said that he believed that the arrangements would secure a reasonable balance of traffic between the two lines, but the division of traffic between them would be kept under review.

Inquiries should be addressed to the Board of Trade, Commercial Relations and Exports Department, Horse Guards-avenue, Whitehall, SW1. (Telephone: Trafalgar 8855, ext. 2304.) Quoting reference CRE/4451/52.

POWER DEVELOPMENT, INDIA

* According to a Press note recently issued by the Government of India the following schemes for power development have been proposed by the State of Madhya Pradesh for inclusion in the Second Five-Year Plan. (In this connection it is emphasised that schemes must first be examined by the Technical Advisory Committee on Irrigation and Power Projects and that their recommendations will be considered by the Planning Commission. These schemes must therefore be considered as tentative.)

Power Projects, Madhya Pradesh State: 1. Additional 30,000 kw. at Khaperkheda Station (Southern Grid). 2. A new station of 30,000 kw. at Akola (Southern Grid). 3. Katni power station—20,000 kw. (Northern Grid). 4. Korba Central Steam Station—40,000 kw.—together with 132 kv., 33 kv. and 11 kv. lines (Eastern Grid). 5. Rural electrification in 107 areas. 6. Tawa Hydro-electric scheme—30,000 kw. 7. Arpa Hydro-electric scheme. 8. Kanham Canal Project—1,180 kw. 9. 66kv. transmission line from Chandni to Bhusawal (Western Districts). 10. Area extensions to 132 kv. and 66 kv. transmission lines in Southern Grid.

Inquiries should be addressed to the Board of Trade, Room 4138, Horse Guards-avenue, SW1, quoting reference CRE852/55.

The SCOTTISH BUILDER

Civic Centre at Wishaw

MOTHERWELL and Wishaw, a joint burgh for the past 35 years, will celebrate Wishaw's 70th year as a burgh by the construction of a new civic centre which will include a new town hall, a new council chamber and offices for the various municipal services. The first sod on the site was cut on August 11 by Bailie Hugh Kerr. Cost of the project is estimated at £350,000.

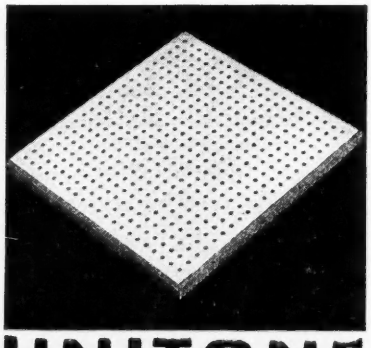
Health Centre Scheme

GREENOCK TOWN COUNCIL is planning the construction of a health centre to embrace a group of consulting-rooms and surgeries, a dental surgery and eye section, school clinic and waiting-rooms. This will be one of the first units in this part of Scotland and will provide inclusive services for patients and for doctors and nurses. The health committee has approved the scheme and will take it forward to the Scottish Home Department for official approval and grant.

Hall-churches at Castlemilk

Two extension schemes of the Church of Scotland are to be located in the Castlemilk housing estate, where Glasgow Corporation are proceeding with a plan to build 8,300 houses to accommodate an ultimate population of over 35,000. The new community comes within the parish of Carmunnock, and the Presbytery of Glasgow has approved recommendations to create two new parishes while still retaining a portion within the Carmunnock parish.

The new parishes will be known as Castlemilk East and West Churches. Plans for new hall-churches have been prepared, and sites on the estate allocated, but building work has still to commence.



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SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from April 18, 1955. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 4s.; Labourers, 3s. 5½d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.* s. d.
1st	25	44 0
2nd	33½	58 8
3rd	50	88 0
4th	66⅔	117 4
5th	75	132 0

For female labour, the rates are:

	s. d.
Operatives on craft operations (at end of probationary period)	3 5½
Operatives on labouring operations (at end of probationary period)	3 2

Glasgow's Housing Costs

THE ratepayers of Glasgow paid last year £1,673,082 for housing, and in the new financial year the total is expected to be fully £250,000 more, requiring about 5d. per £1 additional on the housing rate.

NEW BUILDINGS

Dumfriesshire.—Plans prepared by their architects have been approved for extension and additions to their Lockerbie factory, by the Nethern Wholesale Dairies, Ltd., The Creamery, Park-pl., Lockerbie.

Glasgow.—Plans have been prepared by their own staff of architects at 14, George-st., Edinburgh, for bank at 20/22, Bridge-st., Broomielaw, for Commercial Bank of Scotland, Ltd., Edinburgh.

Glasgow.—Plans for Messrs. Henryk & J. Grunwald, Drumchapel, have been approved for additions and alterations at 246 to 252, Hope-st. Architects: Hughes & Parry, 39, Highburgh-rd., Burnside, Rutherglen.

Glasgow.—Plans have been prepared for Flynn Bros. (Glasgow), Ltd., for building additions and alterations, etc., at 720 to 722, Pollockshaws-rd., and also scheme of reconstruction and additions at Queens-sq., Strathbungo. Architects: William Nimmo, Commercial Bank-chs, Motherwell-Wishaw.

Glasgow.—Plans have been prepared for warehouse alterations and additions for Messrs. Alexander Henderson & Co., Ltd., at 83 to 97, Sauchiehall-st. Architects: John Keppie, Henderson & Gleave (F&A), 21, Woodside-pl., Charing Cross, Glasgow.

Glasgow.—Plans have been prepared for the Archdiocese of Glasgow for new church buildings at Peat-rd. Architects: Messrs. Quiggin & Gee (F), 11, Old Hall-st., Liverpool.

Glasgow.—Plans have been prepared for The Royal Scottish Academy of Music, St. Georges-pl., Buchanan-st., for alterations and additions. Architects: John Laird & Son (F&A), 87, St. Vincent-st., Glasgow.

Glasgow.—Plans have been prepared for laundry at North Woodside-rd., Cowcaddens, for S. S. MacColl & Co., Ltd. Architects: Hughes & Parry, 39, Highburgh-dr., Burnside, Rutherglen, Lanarkshire.

Glasgow.—Plans have been prepared for The Scottish Agricultural Industries, Ltd., Palmerston-pl., Westend, Edinburgh, for scheme of reconstruction, additions and alterations at 80 to 118, Admiral-st., and at Milnpark-st. Engineers: Crouch & Hogg, MInstCE, 18, Woodside-cres., Woodlands-rd., Glasgow.

Glasgow.—Plans are in hand for extensions and additions, etc., to the Church of Scotland Buildings at Sutherland-ave., Pollockshields. Architects: Will. J. B. Wright & Kirkwood (F&A), 9 Woodlands-place, Sauchiehall-st., Glasgow. QS: Smith, Mackay & Simpson, 6 India-st., Elmbank-crescent, Glasgow.

Glasgow.—Plans have been prepared for the SF Association, Carlton-place, for additions and alterations, etc., at Park-gar., West End Park. Architect: James G. Montgomerie, 122 Wellington-st., Glasgow.

Kirkcaldy.—Plans have been approved by the Dean of Guild Court for the new Protestant primary school at the Templehall housing development site at Caodoe-cres. County A: Robert S. Lawrie (F), Council-bldgs., St. Catherine-st., Cupar, Fife.

Lanarkshire.—Plans have been prepared for the Scottish Industrial Estates, Ltd., for new extensions at the Carntyne Estate. Architects: Watson, Salmond & Gray (F&A), Central Station-bldgs., Union-st., Glasgow.

Lanarkshire.—Plans are in hand for the Scottish Industrial Estates, Ltd., Glasgow, for extensions, etc., at the Larkhall Industrial Estate. Architects: George Boswell, Mitchell & Co. (F&A), 256 West George-st., Glasgow.

Lanarkshire.—Plans are to be prepared for additions and alterations at Lawmuir Agriculture School. Architect: John Macnab (F), Education Offices, Bath-st., Glasgow.

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

AUGUST 24.

***†Birmingham City C.**—26 houses in three contracts. City A. Dep. £2 2s. each. Tenders by September 26.

***†Camberwell BC.**—52 flats and maisonettes, Camberwell-gr. TC

***†Leeds Regional Hospital Board.** — Alterations, Castle Hill Sanatorium, Cottingham, E. Yorks. Architect to the Board, Park-parade, Harrogate. Dep. £2 2s. Tenders by Sept. 22.

AUGUST 25.

***†Canterbury City C.**—24 maisonettes, Military-rd. L. Hugh Wilson, City A.

***†Surrey CC.**—New county sec. sch., Chobham. County A, Kingston upon Thames.

AUGUST 26.

***†Bucks CC.**—Station officer's house, on new fire station site, junction Bath-rd. and Tuns-la., Slough. County A, Aylesbury. Dep. £2 2s. Tenders by Sept. 12.

***New Windsor Royal Boro'.**—33 garages and site works at Manor Farm site. BE, Kipling Memorial-bldg.

AUGUST 27.

***†Coventry EC.**—Dining room and kitchen, Edgewick Cty. Sch. Director of Education. Dep. £1 1s.

***†Oundle and Thrapston RDC.**—21 dwellings and 6 garages, Nassington, and 11 dwellings, King's Cliffe. H. G. Kenyon (L), Council Offices, Midland-rd., Thrapston. Dep. £2 2s. each.

***Ross-on-Wye UDC.**—Erection of 30 houses at Berryfield estate. George Laing & Young, 17a, Newmarket-st., Hereford. Dep. £2 2s.

AUGUST 29.

***†Essex CC.**—New laboratory block, Braintree County High School; also extension, Dagenham Kingswood Sec. Sch. County A, Chelmsford.

***†Shaftesbury RDC.**—40 dwellings and road works at Gillingham. J. Hoy, Council Offices. Dep. £3 3s. Tenders by Sept. 19.

***†Wolverhampton CBC.**—232 flats and houses,. Dale-st. site. BE.

AUGUST 31.

***†Leeds Reg. Hospital Board.**—Alterations, Keighley and District Victoria Hospital, Keighley. R. H. Pickles (A), 3, Wards End, Halifax. Dep. £2 2s.

***†Salford TC.**—Erection of St. Albert's RC secondary mod. school. J. C. Prestwich & Sons, architects, Bradshawgate-chbrs., Leigh. Dep. £3 3s.

SEPTEMBER 2.

***Leyton BC.**—Convenience, Auckland-rd. depot. BE&S. Dep. £2 2s.

***Middleton BC.**—Pavilion at Parkfield recreation ground. Boro' A

SEPTEMBER 3.

***Chigwell UDC.**—Seven garages, etc., The Acorns housing site. E&S.

SEPTEMBER 5.

Heckmondwike UDC.—Erection of 10 houses at Dale-la. estate. S. Dep. £2 2s.

Mynyddislwyn UDC.—34 houses at Hill View site, Pontllanfraith.

***Staines UDC.**—42 houses, Convent-rd. and Town Tree-rd., and 38 houses, St. Michael's-rd. and Exeford-av., Ashford. E&S, Shortwood House, 240, London-rd. Dep. £2 2s. each.

***Stretford BC.**—Buildings in parks. A. H. Perry, BE. Dep. £2 2s.

SEPTEMBER 6.

***Bletchley UDC.**—Block of flats, Castles estate. J. E. Smithie, F&S. Dep. £5.

***Chelmsford BC.**—139 garages. BE&S.

Sandbach UDC.—34 houses at site No. 6 and 4 bungalows at site No. 3. E&S. Dep. £1 1s.

SEPTEMBER 8.

***Glasgow Corpn.**—42 houses, Mosesfield-st. A and Planning Dept., 20, Trongate, C1.

***Southend-on-Sea CBC.** — Classrooms, Temple Sutton primary school and Westborough High School. Boro' A, 30, Alexandra-st. Dep. £2.

SEPTEMBER 9.

***Crawley Development Corpn.**—801 dwellings, Tilgate, Stage I. Chief A, Broadfield.

***King's Lynn BC.**—80 dwellings, Seabank estate. G. Holmes (A), Housing A, Clifton House, Queen-st. Dep. £2 2s.

SEPTEMBER 12.

***Barnstaple BC.**—Ten bungalows, Crosslands estate. BS. Dep. £2 2s.

***Barnstaple BC.**—Three shops and maisonettes, Forches estate. BS. Dep. £2 2s.

Caterham and Warlingham UDC.—Erection of 6 dwellings. E&S. Dep. £2 2s.

***Caterham and Warlingham UDC.**—Improvements 31-45, Foxon-la., Caterham. E&S. Dep. £2 2s.

SEPTEMBER 13.

***Salford City C.**—Changing accommodation, Scott-la. playing fields. City E. Dep. £2 2s.

SEPTEMBER 19.

***†Anglesey EC.**—New county primary school, Llanfawr, Holyhead. County A, Llangefni. Dep. £3 3s.

***Hemel Hempstead BC.**—76 dwellings and 6 garages, Highfield Neighbourhood. A. H. Turner, B & Water E.

SEPTEMBER 21.

***†Wilts CC.**—Sec. mod. school, Pewsey. P. A. Selborne Stringer, Clerk, Trowbridge.

SEPTEMBER 23.

***New Windsor BC.**—16 flats, St. Andrew's Cottages, Dedworth-rd. BE. Dep. £2 2s.

SEPTEMBER 26.

***Basingstoke BC.**—69 garages and ancillary approach road works at South Ham and South View estates. Boro' A, Municipal-bldgs. Dep. £1 1s.

***Brighton CBC.**—Factory, Lower Bevendean industrial area. D. J. Howe, MICE, 26-30, King's-rd. Dep. £3 3s.

***Leamington Spa BC.**—13 shops, 9 maisonettes and 4 flats, Crown-way, Lillington estate. Rayner and Fedeski, architects, 28, The Parade. Dep. £2 2s.

SEPTEMBER 27.

***Hastings Corp.**—Six bungalows, 73 houses, 15 flats and 1 shop. BE, 37, Wellington-sq. Dep. £3 3s.

***Ilford BC.** — Demolition of existing pumping station and small adjacent baths building and the erection of reinf. concrete and brickwork pumping station (value of contract approx. £100,000). BE&S, Town Hall. Dep. £2 2s.

NO DATE.

East Retford BC.—36 accommodation units. BS.

***Keynsham UDC.**—Sectional wooden garden sheds. Clerk.

***Tunbridge Wells BC.**—Three blocks of 6 flats, Sherwood estate. BS & Water E. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

AUGUST 24.

***†Middleton BC.**—Asphalt tiling to 7 shops and 5 maisonettes. Boro' A.

AUGUST 27.

***†Blackburn CBC.**—Passenger lift " Hillside," Old People's Home. BE.

AUGUST 31.

***†Burnley CBC.**—External panel walls to open corridors at Lionel-st. infant and junior schools. BE&S, 22-24, Nicholas-st.

SEPTEMBER 2.

***Middleton BC.**—Electrical installation to 7 shops and 5 maisonettes, Hollin estate. G. Syddall (L), Boro' A.

SEPTEMBER 6.

Southgate BC.—Fencing at Bramley sports ground. BE&S.

SEPTEMBER 10.

Cambridge City C.—City E&S. (Materials.)

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SEPTEMBER 12.

***Kingston upon Thames BC.**—Internal redecoration of 192 houses (2 contracts), New Malden. BS. Dep. £2 2s. each.

ROADS, SEWERAGE AND WATER WORKS

AUGUST 26.

***†Bedford RDC.**—Construction of sewers, pumping stations and sewage disposal works. Binnie Deacon and Gourley, engnrs., Artillery House, Artillery-row, SW1. Dep. £10.

SEPTEMBER 5.

***†Leyton BC.**—Annual contracts for reconstruction and repair of sewers. BE&S.

Shepshed UDC.—Extensions to sewage disposal works. Pick, Everard, Keay and Gimson, engnrs., 6, Millstone-la., Leicester. Dep. £2 2s.

SEPTEMBER 7.

Ashby-de-la-Zouch RDC.—Main drainage at Osgathorpe. Pick, Everard, Keay and Gimson, engnrs., 6, Millstone-la., Leicester. Dep. £2 2s.

SEPTEMBER 10.

Aberdare UDC.—Extensions at Hendre Bailey filter station, Llwydcoed. E&S. Dep. £2 2s.

SEPTEMBER 12.

East Devon Water Board.—Contract W6, Western Regional Scheme. Rofe and Raffety, 13, Victoria-st., Westminster. Dep. £2 2s.

SEPTEMBER 14.

Gipping RDC.—Sewerage and sewage disposal works at Needham Market. Sandford Fawcett and Ptnrs., consulting engnrs., 53, Victoria-st., SW1. Dep. £5 5s.

SEPTEMBER 17.

Inverness RBC.—Loch Duntelchaig water supply (Contract " D "). G. H. Hill & Sons (Manchester), civil engnrs., 51, Mosley-st., Manchester, 2. Dep. £5 5s.

SEPTEMBER 20.

Cambridge City C.—Improvement works to Jesus Green open-air swimming pool. City S. Dep. £3 3s.

SEPTEMBER 23.

Llandilo UDC and RDC.—Construction of joint sewerage and sewage disposal scheme for Llandilo UDC and village of Ffairfach. Norman E. Evans, MIMunE., Council Offices, Crescent-rd., Llandilo. Dep. £5 5s.

GENERAL BUILDING WORK

(LONDON)

Hornchurch.—OFFICE.—Proposals have been made by A. Boake Roberts & Co., Ltd., chemical manufacturers, Carpenters-rd., E15, for the erection of a block of offices in Ferry-la., Rainham.

Kensington.—YOUTH HOSTEL.—Plans prepared by Sir Hugh Casson, RDI, MA, FRIBA, 110, Old Brompton-rd., SW7, for the reconstruction of the east wing of Holland House and the erection of a further building with 200 beds for the Youth Hostels Association have been submitted to LCC for town planning approval.

Leyton.—MAJOR REDEVELOPMENT.—First stage of BC's scheme to rebuild the borough stage by stage is to cost £600,000. The borough has been divided into three large areas. Near-slum houses are to be demolished and replaced by modern estates. Within five years it is expected that the smaller of the three estates will have been completed and work on the second well under way. The first estate—which it is estimated will house more than 200 families—will cost about £600,000. It is partially industrial. Alternative factory sites will be provided before work on the site can be commenced. It has already been summarily surveyed and after a report on the condition and value of each house in the area has been prepared planning approval will be sought. The exact extent of the areas to be developed has not been decided yet—they will be outlined after reports have been received on the condition of houses on the fringe of land already earmarked. The industries will be " rehoused " at one of the two " industrial estates " planned for Oliver-rd. and Lea Bridge-rd.

London.—YMCA HOSTELS.—Proposals are being considered by the Young Men's Christian Association, Great Russell-st., WC1, for the enlargement of several of their hostels in the London area.

Wandsworth.—YOUTH CENTRE.—A two-storey prefabricated building in concrete is proposed by the Knights' Association of Christian Youth Clubs for erection as their headquarters in Streatham-pl., Streatham Hill. A canteen, committee room, hobbies room, dark room, dressing room, two games rooms and a chapel will be built on the ground floor. The second floor will consist of a hall and stage. The estimated cost of the scheme will be about £12,000. Mr. Maurice Smith is secretary of the Association.

(PROVINCIAL)

Accrington.—Tenders to be invited shortly for erection of C of E Sec. Mod. Sch., £141,000 est.

Belper.—RDC propose erection of 32 houses at Duffield, 16 at Dethick, Lea and Holloway, and 12 at Smalley.

Belper.—Adshead, Ratcliffe & Co., Ltd., Campbell-st., Belper, propose erection of paint factory at Derby-rd.

Blackwell.—RDC to invite tenders for 84 dwellings at Thickley Bank, Shirebrook.

Bradford.—TC to prepare plans for erection of shop premises at 96a, Godwin-st.

Brierley Hill.—TC to seek Min. approval for construction of Assembly Hall, £75,000 est.

Broadstairs.—Urban Council have received formal approval from Ministry of Housing for borrowing of £50,890 for erection of 41 houses on Northdown Hill housing estate.

Broughton.—Cheshire CC propose erection of office and mess block at County Fire Service Headquarters, £40,000 est.

Carlisle.—City C to obtain tenders for building 108 houses and 42 old people's houses. City E, L. J. A. Stow, 18, Fisher-st., Carlisle.

Chapel-en-le-Frith.—Derbys CC to erect two ward units at The Elms.

Cheltenham.—Hsg. Com. to go ahead with acquisition of old WAAF site on the Bourton-on-the-Hill road for housing purposes. Surveyor, G. E. Knight, to survey site and prepare layout for its development for housing.

Chester.—TC to prepare plans for erection of crematorium.—Approved sketch plans for proposed Hoole Cty. Sec. Mod. Sch.

Coventry.—Work to commence in September on large private housing estate at junction Leamington-rd./Stonebridge Highway, for Robinson, Osborne & Moules, estate agents, Coventry.

Crook and Willington (Co. Durham).—UDC's slum clearance scheme involves demolition of 2,000 houses during next 20 years.

Darlington.—TC received loan sanction £101,387 for building 74 houses on Branksome Estate. BE, G. S. Short, Town Hall.

Darlington.—Edgar Lawson, Ltd., builders, Alliance Works, Albert Hill, to erect 26 houses at junction Coniscliffe-rd./Carmel-rd.

Dudley.—TC propose erection of buildings with aged persons' dwellings on ground floor, and single-persons' flats above, in Woodside redevelopment area.

Dudley.—TC propose replacing "Iron School" at Netherton by school building.

Durham.—Family group homes at Middlestone Moor, Lanchester and Billingham. County A (A).

Durham.—Following local councils to erect family group homes in their areas on behalf of Durham CC: Felling, Consett, Blaydon, Hebburn, Ryton and Hetton UDCs, and Jarrow TC.

Durham.—CC proposes grammar/tech. sch. at Washington, £235,000. County A, G. R. Clayton, Court-la.

Durham.—RDC received loan sanction £231,440 for erection of 180 houses.—J. M. Angus, 21, Lovaine-pl., Newcastle-on-Tyne, prepared plans for new club and steward's house at Mill-la., Gilesgate Moor.—RDC approved estimates by S. K. G. Miller, for 20 houses at Belmont, cost £26,055. Council has own direct labour organisation.

Durham.—Cordingley & McIntyre, The College, been appointed A by CC for erection of branch library at Peterlee.—Davis & Partners, Osborne-rd., Newcastle-on-Tyne, been appointed QS for proposed Felling Special Sch., and A. E. Towler, Preston (Lancs) been appointed QS for Willington Mod. Sch.—F. Iddison, 24, Skinnergate, Darlington, QS for proposed family group homes at Stockton, Sedgefield, Stanley and Chester-le-Street for CC.

Durham.—CC to obtain tenders for erection of family group homes at Stanley, Sedgefield, Stockton, and Chester-le-Street. County A, G. R. Clayton, Court-la.

Easington (Durham).—50 houses. S, Easington RDC (A).

Easington.—Cordingley & McIntyre, The College, Durham, been appointed A for proposed tech. college at Easington for Durham CC.

Eston (Yorks).—UDC to build 16 old people's bungalows on Teesville East housing estate. N. C. Harrison, UDC S.

Farnborough (Hants).—New shopping centre to be built. Contracts exchanged between Farnborough UDC and London firm of developers. Tenders for building work yet to be issued. Linton Roberts, surveyor, 5 and 6, John Princes-st., Cavendish-sq., London, acting for developers.

Felling (Durham).—216 houses by direct labour and block of three-storey flats. H. Fawcett, Surveyor. UDC (A).

Felling (Co. Durham).—UDC given permission to Gateshead Corpn. to build 56 non-traditional type houses on UDC's Leam-la. Estate. BS (A).

Galway (Ireland).—Galway Fever Hospital to be reconstructed at cost of £38,000, and may be Western Regional centre for treatment of polio. Galway CC to spend money on reconstruction, but not yet made its final decision on the polio proposal.

Gateshead.—BE, G. F. Winters, been authorised to prepare detailed plans for proposed £75,000 crematorium at South Cemetery.

Gateshead.—Corp. approved plans by BS, G. S. Winters, for cemetery and crematorium at Low Fell, est. cost £75,000.

Golborne.—International Harvesting Co., Ltd., propose erection of factory at Pocket Nook-la. (Scheme not finally decided.)

Hexham.—UDC considering erection of shops on Priestlands housing estate. S, W. A. Hancocks.

Hyde.—BC propose purchase and adaptation of premises to form home for aged men.—Approved layout for 55 houses at Donald-ave.

Jarrow (Co. Durham).—Early start expected on construction of new church hall at Primrose for Vicar of Hedworth, cost £11,000. A, Cordingley & McIntyre, The College, Durham.

Jarrow (Durham).—3, 4, 5 and 6-storey blocks of flats, est. cost £850,000. BE (A).

Keighley.—Boro' A to prepare plans for library premises on sites of Lowfield House and 2, Spencer-st.

Lancaster.—Governors of Lancaster Royal Grammar Sch. propose improvements to premises, £69,000 est.

Lancaster.—Littlewoods Stores, Ltd., propose erection of premises at Market-st. Plans by own A department.

Leamington Spa.—Filton, Ltd., Clapham-st., Leamington, propose erection of factory on Queensway Trading estate. A, H. W. Wilson-Wood, 57, The Parade, Leamington.

Leigh.—TC approved plans for erection of miners' welfare centre at Twist-la. for Coal Industry Welfare Assoc.

Leigh.—British Legion propose erection of modern premises on site bounded by Hasmere-st., Windermere-rd. and Glebe-st.

Liverpool.—TC seek loan £22,500 for extensions at Croxteth sec. mod. sch.—Approved erection of single-storey office block on northerly side of Victoria Dock for use of Customs and Excise for MoW.

Llanidloes.—TC propose erection of further 50 houses on Fifth Housing site.

Lymm.—Old Students' Assoc. of Grammar Sch. propose construction of open-air swimming pool as war memorial.

Macclesfield.—RDC approved plans for housing development at site off Oak-gr., Chester-rd. and London-rd. North, Poynton, for W. H. Matthews, Ltd.

Manchester.—TC approved plans rebuilding of Lady Chapel after war damage at Manchester Cathedral, Fennel-st. and Cathedral-st., for Dean and Cannons. A, Sir Hubert Worthington, 178, Oxford-rd., Manchester.—Approved erection of factory at Cowburn-st., Cheetham Hill, for D. Horwich. Application by Leslie D. Clegg Morgan & Co., 65, Princess-st.—Reg. Hosp. Board approved plans for conversion at Corbar Hall Hospital, Buxton, to form maternity unit, £11,026 est.; extensions to operating theatre unit at Hope Hosp., Salford, and opthalmic out-patients' department at Birch Hill Hosp., Rochdale.—EC received approval for inclusion of following in 1956-7 schools programme: Completion of North Manchester Girls' High Sch., £109,371 est.; extensions to Spurley Hey Sec. Mod. Sch., Gorton, £90,000 est.; extensions at Elysian-st. Cty. Prim. Sch., Openshawe, £50,000 est.; extensions at Abbey Hey Cty. Prim. Sch., £40,000 est.; extensions at Burnage Gram. Sch., £80,000 est.; first instalments of Victoria Park RC Sec. Sch., £108,785 est.; Jewish Sec. Mod. Sch., Wilton Polygon, £99,369 est.; Albert Memorial C of E Sec. Sch., Collyhurst, £98,736 est.; Royle Green C of E Prim. Sch., Wythenshawe, £54,208 est.—Sydney Tatchell, Son & Ptnrs., Cliffords Inn, Fleet-st., London, EC4, prepared plans for part rebuilding and alteration at Deansgate, St. John-st. and Longworth-st. for National Library for Blind.

Market Drayton.—RDC to acquire site at Hinstock Hall for new housing scheme.

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Matlock.—UDC approved plans new store at Causeway-la. for F. W. Woolworth & Co.; new offices at Derwent Mills for Patons & Baldwins, Ltd.; service garage and petrol pumps at Derby-rd., Cromford, for B. Swain

Matlock.—Derbys CC to seek loan £230,000 for purchase and adaptation of Smedleys Hydro to form cty. admin. headquarters.

Middlesbrough.—TC approved proposals by Wimpey & Co., Ltd., Orchard House, Newcastle-on-Tyne, to erect depot and offices in Cargo Fleet-la.

Middlesbrough.—Tees Conservancy Commission, Queens-terr., approved designs for new deep-water berths on Tees at Lackenby, and specifications and quantities are to be prepared. Scheme will cost £2¼ m., including £2 m. for civil engineering work. E, Sir W. Halcrow & Ptnrs., Alliance House, Caxton-st., London, SW1.

Middlesbrough.—Following QS appointed by EC in connection with additions to schools: C. E. Peverley, York (additions to Acklam Hall Sec. Sch.); J. W. Hummers & Ptnrs., Newcastle-on-Tyne (additions to Kirby Sec. Gram. Sch.); and Turner & Ing, Middlesbrough (Danegarth Assembly Hall, Archibald kitchen/dining-room, and Prissick No. 1 Cty. Sec. Sch.).

Middlesbrough.—Cairns & Byles, 8, Osborne-rd., Newcastle-on-Tyne, been appointed consultant E by EC in connection with additions to Acklam Hall and Kirby Sec. Gram. Sch., Danegarth assembly hall, Archibald kitchen dining room, and Prissick No. 1 cty. sec. sch.

Middlesbrough.—R. J. L. Jackson, Guisborough, A for proposed church hall and parsonage at Penrith-rd. for Diocese of York.

Newcastle-on-Tyne.—49 flats and maisonettes in blocks and 17 police houses. City A (A).—City C recommended to build aged people's home, cost £68,000. City A (A).

Newcastle-on-Tyne.—City C recommended to build home for infirm people on Montagu Estate at £68,000. City A, G. Kenyon, 18, Cloth-market.

Newcastle-on-Tyne.—Tenders to be invited for rebuilding of "Rock Hotel," Cambridge-st., for J. Reid & Son. A, C. S. Errington, 46, Grainger-st.

Newcastle upon Tyne.—Plans by Cackett, Burns, Dick & McKellar, 21, Ellison-pl., Newcastle, for power station at Scott & Turner's new factory at Fawdon, been approved.—Plans by City A for 18 houses with garages at Kenton Park and layout of 222 houses at North Kenton been approved. R. T. James & Ptnrs., architects, to add another storey to their offices in Clavering-pl.—Plans by Robt. Burke, 10, Lambton-rd., Newcastle, for kindergarten school at Convent of La Sagesse been approved.—C. A. Parsons & Co., Ltd., engineers, Shields-rd., Newcastle, had plans approved for new factory sited at Fossway.—J. M. Bartlett and J. Bartlett and Tyne Taxis, Ltd., Grantham-rd., Newcastle, to build warehouse, offices, workshop and garage. Plans by Newcombe & Newcombe, Eldon-sq., Newcastle, been approved.

North Riding.—EC to spend £37,510 on erection of special day school at Redcar for 100 subnormal children. Scheme is included in next year's building programme. Cty. Sch. A, D. W. Dickenson, County Hall, Northallerton.

Northallerton.—UDC to build 18 houses in Bullamoor-rd. to plans by Brierley, Syme & Leckenby, 13, Lendal, York. No contracts let.

Northants.—CC seek permission to erect new fire station at Towcester, £10,700 est.

Northumberland.—Mauchlen & Weightman, 12, Saville-row, Newcastle-on-Tyne, been appointed A and J. P. Allen & Hill, Tankerville-terr., Newcastle, QS for proposed Tweedmouth Cty. Mod. Sch.

Northumberland.—Following A appointed by EC for proposed schools: Reavell & Cahill, Lloyds Bank-chbrs., Alnwick (Alnwick Sec. Mod. Sch); P. L. Browne, Son & Harding, Pearl-bldgs., Newcastle-on-Tyne (Morpeth Sec. Mod. Sch.; and Gray & Ptnr., Camden-st., North Shields (Wallsend Tech. Mod. Sch.)

Northumberland.—CC to obtain new tenders for erection of ambulance depot and child welfare centre at South Broomhill. County A, C. C. Brown, County Hall, Newcastle-on-Tyne.—County Roads and Bridges Committee agreed to reconstruct Woodburn Bridge, cost £37,000, and Government grant will be made.

Northwich.—UDC propose demolition of Market Hall and erection of new single-storey building.

Norton.—RDC approved erection of new maltings at Knapton for Assoc. British Maltsters. A, Gelder & Kitchen, Hull.

Oldham.—BC seek Min. approval for erection of further 195 houses.

Oswestry.—RDC to prepare layout for erection of grouped dwellings for old people between St. Martins-rd. and Holyhead-rd. at Gobowen.

Otley.—UDC to invite tenders for erection of 32 houses.

Prudhoe (Northumberland).—UDC considering erection of single-bedroomed houses at Broomwood Huts, Mickley. Council's A, J. M. Angus, 21, Lovaine-pl., Newcastle-on-Tyne.

Rawdon.—Airedale and Wharfedale Joint Crematorium Comm. to invite tenders shortly for erection of crematorium, £56,000 est.

Redcar (North Riding).—North Riding EC received Min. approval for school for E. S. N. children, cost £37,000. County A (A).

Rotherham.—Start on £1 m. extension scheme for College of Technology to be made in next financial year. First instalment of permanent extensions included in 1956-57 building programme. The site of new college on opposite side of Howard-st. to existing college. Corpn.'s Development Plan makes provision for building of county college on same site as new college.

Rancorn.—UDC to negotiate tender with W. E. Jones (Contractors), Ltd., Middlewich, for erection of 167 houses at Halton Lodge Farm site; propose 12 houses at Halton, 34 at Frodsham and 36 at Cobbs Quarry, Appleton, in 1956 programme; approved plans for new store at 29, High-st., for F. W. Woolworth & Co., Ltd., Water-st., Liverpool.

Salford.—TC approved plans for two-storey extension at rear of 76, Gordon-st., for Gordon Mills, Ltd.

Scarborough. — £36,550 crematorium project approved by TC. Parks Com. putting forward original scheme, est. cost £36,550, as first stage of more expensive plan. Second and third stages include provision of second cremator, additional toilets, and special accommodation for book of remembrance.

Sedbam.—J. Nimmo & Sons, Castle Eden, contemplating erection of licensed premises near Mill House Farm. UDC S. A. M. Smith, to prepare plans for duplex type of houses.

Sheffield.—TC approved sketch plans by City A for new type of four-bedroomed houses at Gleadless Valley Estate.—Propose new branch library at Tamonville-rd.

Shildon (Durham).—UDC approved proposal to build 36 houses and 10 aged persons' homes, cost £57,627. Surveyor (A).

South Shields.—G. R. Smith & Ptnrs., 7, Charlotte-ter., A for proposed Methodist Sunday Sch. in Highfield-rd.—TC is to spend £20,000 on erection of new premises near Market-pl. on behalf of MOW.—Whitstone Properties, Ltd., approached TC with scheme for construction of three-storey building with four shops on ground floor near Market-pl.

Stretford.—BC approved plans: maintenance building at Westinghouse-rd., for Metro Vicks, Ltd.; workshop extension and car showroom at 416, Barton-rd., for Bristers, Ltd.; offices and welding sch. at Westinghouse-rd., for Metro Vicks, Ltd.; warehouse and offices at 708, Chester-rd., for Ruberoid Co., Ltd.; offices and warehouse at Trafford Park-rd., for Greenwoods Building Industries, Ltd.; rebuilding of factory at Lucy-st., for Burgons Extensions and Investments, Ltd.

Tarvin.—RDC to prepare alternative layout plans for erection of bungalows at westerly end of The Wynd, Kelsall, and on southerly side of Springfield-ave., Malpas.

Thornaby (Yorks).—North Riding CC to build home for 40 old people. County A, Northallerton, (A).

Tynemouth.—Plans by A. S. Waring, 36, Jesmond-rd., Newcastle-on-Tyne, for six houses on Monkstone Estate for M. J. Liddell & Sons, builders, Great North-rd., Newcastle-on-Tyne, been approved.—Tenders will be considered shortly by TC for erection of first blocks of flats in connection with North Shields redevelopment scheme. A, Tasker & Child, Trinity-bldgs., New Bridge-st., Newcastle.—G. H. Gray & Ptnr., Camden-st., North Shields, to prepare plans for 10 houses in Gallant-ter. and Baird-ave., North Shields.

Walsall.—Hancox & Plimmer, Station-rd., Bloxwich, propose erection of factory at Fryers-rd.

Wellington.—Salop CC seek approval for sketch plans for erection of aged persons' home at The Vineyard, £49,100 est.

Wores.—EC approved plans for Pedmore Fields Prim. Sch., £66,200 est.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Andover BC.—Five houses, Dene-rd. for BC. BS. *Eades Bros., Ltd., Charlton, Nr. Andover, Hants. £6,430.

Bakewell.—Erection of ambulance station at Baslow-rd. for Derbys. CC: *J. H. Cartledge, Baslow. £12,305.

Bilston.—Erection of 18 aged persons' bungalows for TC: *Gregory Housing, Ltd., Worthing, Sussex. £15,713.

Blyth (Northumberland).—Civil Defence stores: *Stephenson Clarke, Collingwood-st., Newcastle-on-Tyne.

Bradford.—Erection of 14 blocks of 5-storey flats and maisonettes at Thorpe Edge estate for TC: *Geo. Wimpey & Co., Ltd., London, £257,107.

Brampton (Cumberland). — Telephone repeater station: *Elliott & Son, Main-st., Brampton.

***†Brentwood.**—Erection of 29 bungalows at Danbury House site, Pilgrims Hatch, for UDC.

J. W. Powell & Sons, Ltd., Brentwood ..	£51,108
D. A. Moody & Co., Ltd., Romford ..	34,578
J. A. Porter & Co., Ltd., London, E14 ..	33,395
T. J. Barrett, Ltd., Upminster	31,521
S. H. Lansdell & Sons, Upminster	30,335
*E. J. & A. Tredget, Brentwood	29,555

Burton-on-Trent.—Extensions to factory at Derby-rd. for Pirelli, Ltd.: *T. Lowe & Sons, Ltd., Curzon-st., Burton-on-Trent.

Bury.—New X-ray department at Fairfield General Hospital for Manchester Regional Hospital Board: *Frank Marsland, 7, Bullock-st., Heaviley, Stockport, £11,907.

Busby (Lanarkshire).—30 houses for CC at the Station-rd. development site (£43,167). Architect, Samuel MacColl (A), County-bldgs., Beckford-st., Hamilton West: *George Wilson (Stonehouse), Ltd., Lech Park Contracting Works, Green-st., Stonehouse.

Carlisle.—Erection of cinema at Pennine Way. *John Laing & Sons, Dalston-rd., Carlisle.

Chester.—Stage II of College of Further Education for EC: *Thos. Warrington & Sons, Ltd., 82, Station-rd., Ellesmere Port, £63,842.

Chesterfield.—Erection of Whittington Secondary School for EC: *Martin Cowley, Ltd., The Limes, High-st., Clay Cross, £183,760. Erection of a new public house at Keswick-dr. for Brampton Brewery Co., Ltd.: *Ripleys, Ltd., 9, Moseley-st., Ripley. Erection of 204 " No Fines " houses at Old Whittington estate for BC: *Geo. Wimpey & Co., Ltd., London, £306,889. 18 flats at Old Whittington estate: *W. Redmile & Sons, Ltd., 155, Dobcroft-rd., Chesterfield, £23,319.

Clydebank.—Dumbartonshire scheme of 352 houses at the Fairfly Housing Development site. Architect, J. Austen Bent (A), 15, Palmerston-pl., West End, Edinburgh: *James Miller & Ptnrs., Ltd., 15, George-st., Edinburgh.

Crawley.—50 dwellings, Northgate housing site, No. 9, for Dev. Corpn. Architect, H. S. Howgrave-Graham, ARIBA, AMTPI. Quantities by Gardiner & Theobald: *Carlton Contractors, Ltd., Lingfield-cres., Rochester-way, Eltham, SE9. £89,956.

Cumberland.—Erection of second atomic power stn. at Calder Hall at est. cost of £2m. *Taylor Woodrow, Ltd.

Durham.—Erection of Bowburn and Billingham North Sec. Mod. Schools. County A, G. R. Clayton, Court-la., Durham: *G. W. Lazenby, Ltd., Ferryhill (£150,168) and *Fordy & Son, Boathouse-la., Stockton (£147,749) respectively.

Eastern Region (British Railways).—The undermentioned contracts have been placed:—
*R. F. Herron, Ltd., Station Parade, Ickenham-rd., Ruislip, Middlesex (reconstruction of station awnings to platforms at Lincoln Central Station). *L. Fairclough, Ltd., Chapel-st., Adlington, Lancs (stabilisation of cutting slopes at three sites between West Horndon and Pitsea). *John Cracknell, Ltd., Huntly-grove, Peterborough (alterations and additions at Central Stores Depot, Peterborough). *F. Taylor & Sons (Manchester), Ltd., 142, Bolton-rd., Pendleton, Salford, 6, Lancs (supply and delivery of three Mark II Taylor " Jumbo " Cranes).

Ennerdale.—Erection of 10 houses at Arlecdon, 10 at Moresby and 25 at Frizington for the RDC: *Thomas Armstrong, Ltd., Cockermouth.

Eskmeals (Cumberland).—Heavy engineering workshop for the Ministry of Supply: *J. Laing & Son, Carlisle.

Felling (Co. Durham).—Erection of depot for Cadbury Bros. Architects, S. W. Milburn & Ptnrs., 9, Esplanade, Sunderland: *John Laing & Sons, Dalston-rd., Carlisle.

Gateshead (Durham).—135 dwellings in blocks in East-st.: *G. Wimpey & Co., Orchard House, Fenwick-ter., Newcastle-on-Tyne, £220,000.

Gateshead.—Alterations and additions to offices for Clarke, Chapman & Co., Ltd. Architect: C. S. Errington, 46, Grainger-st., Newcastle-on-Tyne: *David Glen, Ltd., Albert-rd., Jarrow-on-Tyne.

Glasgow.—Houses of new type at Casson-st. Development. Housing A. Archibald G. Jury (F), Glasgow Cross, Glasgow: *Robert W. Stewart & Co., Ltd., St. Enoch's-sq., Glasgow.

Glasgow.—Scottish Milk Bottle Exchange, Ltd., extensions and additions, etc., at Kenmore-st., Pollockshields: *Isaac Currie & Sons, Ltd., 23, Glasgow-rd., East Kilbride, Lanarkshire.

Glasgow.—Protestant primary school at site 2 of the Castlemilk Housing Development. Architect, Bernard Bercott (F), 118, Blythswood-st., Glasgow. QS, Messrs. Robert Armour & Ptnr., 21, Hope-st., Glasgow: *L. K. Mackenzie Ptnrs., Ltd., 304, Cathedral-st., Townhead, Glasgow, £139,630.

Glasgow.—New buildings for Cooper, Macdougall & Robertson, Ltd., at Lechburn-rd., Possilpark: *The Kelvin Construction Co., Ltd., Possilpark Structural Engineering Works, Glasgow. The same contractors are to erect a new building for Alley Macleliand (Pelmadie), Ltd., at Jessie-st., Pelmadie-rd., Gushetfaulds.

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Lanarkshire.—Office buildings at Uddingstone for CC. County A, William R. Watt (F), Albert-st., Motherwell-Wishaw. Excavation, brick, building and allied works: *Grant & Burns, Ltd., 200, Castle-st., Townhead, Glasgow. Plumbing, sanitary engineering and allied works: *Lanarkshire County Direct Labour Department, Albert-st., Motherwell-Wishaw. Joinery, carpentry, ironmongery and allied works: *George S. Macaulay, Ltd., Overton Joinery Works, Netherburn. Roof tiling, roughcasting and allied works: *Macartney & Reid, Ltd., 32, Glasgow-rd. Motherwell-Wishaw. Electrical fittings installation and allied works: *David Fisher (Burnbank), Ltd., 341, Glasgow-rd., Burnbank, Rutherglen. Plumbing, sanitary and heating engineering installations and allied works: *Lanarkshire County Direct Labour Department. Tile, terrazzo and allied works: *Macartney & Reid, Ltd., Motherwell-Wishaw.

Lancaster.—Erection of new St. Luke's Church Hall at Slyne-rd. for PC Council: *Thompson and Jackson, St. Ann's-pl., Lancaster, £20,000 approx. 42 houses and bungalows at Ridge estate for TC: *Nicholson and Wright, Ltd., Willow-la., Lancaster.

Liverpool.—Following for TC: 32 maisonettes at Brownlow Hill: *Peak Construction Co., Ltd., Liverpool, £67,894. 69 dwellings and 24 garages at Mather-ave.: *Unit Construction Co., Ltd., Spekeboulevard, Liverpool, £98,379. 34 dwellings at Pilch-la.: *W. A. McDonald & Co., Ltd., 157, Breckfield-rd., North Liverpool, £59,842.

Llandudno.—36 flats at Maesdu for UDC: *F. Tyldesley, Queen's-rd., Llandudno, £52,736.

¶London (Admiralty).—Particulars of contracts over £1,000 in value:—
Lincs: reinforced concrete work, F. A. Would, Ltd., Ladysmith-rd., Grimsby. *Cornwall*: Building work, Noye Bros., Lady-st., Helston, Cornwall. *Hampshire*: Building work, Keith Andrew & Co., Ltd., 7, Warwick-st., Worthing.

¶London (Air Ministry).—Contracts to the value of £500 or over for the week ended August 13:—
Building work: Jefferson Pond, Ltd., 70, Kings-rd., Swanage; P. P. Taylor (Doncaster), Ltd., 6, South Parade, Doncaster; Wilson Lovatt & Sons, Ltd., Clarence-St., Wolverhampton. *Resurfacing of runways*: Western Trinidad Lake Asphalte Co., Ltd., Asphalt House, St. Mary, Cardiff. *Construction and completion of hardstandings*: W. & J. R. Watson, Ltd., 81, Great King-st., Edinburgh, 3. *Installation of gas filtration plant*: Thermotank, Ltd., Helen-st., Glasgow, SW1. *Painting work*: G. & J. Seddon, Ltd., Little Hulton, Walkden, Nr. Manchester; F. Parkinson, Ltd., Mowbray-dr., Blackpool; Arnold Sharrocks, Ltd., Spotland Bridge, Rochdale, Lancs; George Jones & Son (Cttrs.), Ltd., 91, Everton-rd., Liverpool, 6; F. & J. Pilling (Bros.), Ltd., Antwerp House, Birch-la., Longsight, Manchester, 13; W. J. Brooker, Ltd., Eastwood-av., Ellesmere Port, Cheshire. *Artificers work*: R. Costain & Sons (Liverpool), Ltd., Barlowes-la., Fazakerley, Liverpool 9; Janes (Builders), Ltd., Buckingham-av., Trading Estate, Slough, Bucks.

¶London (Metropolitan Police).—Result of tenders for Metropolitan Police building works:—
New bathroom and improvements, 425, Grove-rd., E11, Fisher & Stringer, Ltd., £655. Redecoration and repairs, Leyton Police Stn., Mr. E. Kilburn, £1,050. Formation of bathroom, 82, Bond-rd., Surbiton, J. W. Streeton (Coombe), Ltd., £573.

¶London (MoW).—Contracts placed by MoW for week ended July 30:—
Cambridgeshire: West Wratting Airfield, complete membrane covering to nissen and romney huts, Bitumen Industrial (Contrs.), Ltd., Whitby Trading Estate, Slough, Bucks. *Derbyshire*: Eden-street, Alvaston, extension to T.E., A. Holmes & Sons, Ltd., Navigation Bridge, London-rd., Derby. *Flintshire*: I.R.O. Clwyd Buildings, Clwyd-st., Rhyl, replastering and internal painting, James Ferguson & Co. (Decorators), Ltd., Gore-st., Salford, 3. *Hertfordshire*: Hatfield, erection of a T.E., James Crosby & Sons, Ltd., 59, Queen's Gdns, W2. *London*: Customs House, Lower Thames-st., EC3, internal painting, South London Decorators, Ltd., 9, Streatham High-rd., SW16; Commonwealth Relations Office, 4, Central Building, SW1, internal decorations, South London Decorators, Ltd. Royal Hospital, Chelsea, SW3, alterations to in-pensioners' cubicles wards, Hampton & Sons, Ltd., 158, New Bond-st., W.1. *Surrey*: Haslemere, erection of a T.E., Brazier & Son, Ltd., 303/5, Portswood-rd., Southampton. *Worcestershire*: Lye, erection of new A.T.E., A. F. R. Godfrey & Co., Ltd., 46, Waterloo-rd., Wolverhampton; M.O.S. Housing Estate, " Longlands," Malvern, external painting, Alfred Bagnall & Sons, Ltd., Navigation-st., Wolverhampton. *Yorkshire*: Marston Moor Airfield, mebrane covering to roofs of huts, Evode, Ltd., Glover-st., Stafford.

¶London (MoW).—Contracts placed by MoW for week ended August 6:—
Buckinghamshire: P.O.E.D. High Wycombe, adaptations, John Hopkins (Bldrs), Ltd., Hughenden, High Wycombe. *Glamorganshire*: B.T. Storage depot, Dowlais, re-roofing with asbestos corrugated sheets, Hall & Co., Ltd., Mill-la., Western-av., Cardiff. *Herefordshire*: Ministry of Food Cold Store, Grandstand-rd., Hereford, asphalting main roofs, Ragusa Asphalte Paving Co., Ltd., 28, Severn-st., Birmingham 1. *Kent*: H.P.O., Canterbury, alterations to public office and other works, R. Corben & Son, 5, Castle-st., Dover, Kent. *Lancashire*: Moss Side State Institution, Manchester, erection of 4-bedroom house for assistant medical officer, J. & E. Woods (Bldrs.), Ltd., Orrell-la., Burscough Bridge, Lancs. *Middlesex*: Temporary office building, Pinner, internal redecorations, Alfred Bagnall & Sons, Ltd., 141, Uxbridge-rd., W12. *London*: Ivybridge

House, 1-5, Adam-st., WC2, internal decorations, South London Decorators, Ltd., 9, Streatham High-rd., SW16; Adelaide House, EC1, internal painting, South London Decorators, Ltd.; Houses of Parliament, SW1, new roof over corridor, east division lobby, G. E. Wallis & Sons, Ltd., 231, Strand, WC2.

Yorkshire: Church-la., Pudsey, Nr. Leeds, erection of Post Office, sorting office and garage, F. Shepherd & Son, Ltd., Blue Bridge-la., York.

¶**London (War Dept.).**—Contracts placed by War Department for week ended August 6:—

Essex: Building work, J. Moss & Son, Ltd., Colchester. *Dorset:* Roadwork, W. & J. Glossop, Ltd., Exeter; Painting and decorating, Arnold Sharrocks, Ltd., Ash, Near Aldershot. *Kent:* Miscellaneous, H. Goodsell, Maidstone; W. H. Holden, Rainham, Kent; Building work, Wm. Dunk, Ltd., Folkestone; Miscellaneous, A. J. Vincent & Son, Ltd., Gillingham, Kent. *Lancashire:* Miscellaneous, Harry Hague (Joiner & Builders), Ltd., Ashton-on-Lyne. *London:* Painting, Fields, Ltd., Richmond. *Middlesex:* Roadwork, Constable Hart & Co., Ltd., Richmond. *Midlothian:* Building work, H. Raitt & Sons, Millhill. *Norfolk:* Building work, Tooley & Youngs, Stalham. *Shropshire:* Electrical installation, Williams Bros. (Electrical), Ltd., Wolverhampton. *Surrey:* Cable Work, Cable Jointers, Ltd., Acton. *Yorkshire:* Painting & decorating, D. Humberstone & Co., Ltd., Louth.

Northumberland.—Tenders accepted by CC for building police houses: *Middlemiss Bros., Stepney Bank, Newcastle, for police houses at Hexham; *Chapman Bros., Lemington, police houses at Acomb; *A. Carr & Co., Ltd., Stoddart-st., Newcastle, police houses at Guide Post; and T. Gardiner & Son, Berwick, police houses at Scremerston.

Nottingham.—New factory at Kimberley for Wolsey, Ltd.: *Geo. Wimpey & Co., Ltd., London.

Orpington.—Single-storey office building, The Walnuts, Orpington High-st., for UDC. A. W. P. Willis, MIMunE. E&S:—

James Miller & Partners, Ltd., Pall Mall, SW1	£27.979
Ridgeway Contractors, Ltd., Orpington ..	27.945
Glassup & Co., Ltd., Orpington	27,873
Harrison Smith Buildings, Ltd., Birmingham, 6	27.309
J. Anderson, Orpington	27.190
W. J. Eaglen, Ltd., Mottingham	27.111
*Hawker-Smith, Ltd., Erith	25.874

Padiham.—Extensions to factory for Morley Products, Ltd.: *F. Mitchell & Son, Ltd., River-pl., City-rd., Manchester, 15.

Rotherham.—Erection of new Brinsworth strip mill at The Ickles, for Steel, Peech & Tozer. Bulk excavation: *Sir Alfred McAlpine & Son, Ltd., Hooton, Cheshire. Concrete foundations: *George Longden & Son, Ltd., Sheffield. Structural steelwork: *United Steel Structural Co., Ltd.

St. Marylebone.—Erection of offices at Wigmore-st., with floor area of 216,000 sq. ft. Est. cost £1m. Architect: C. H. Elsom, ARIBA, 44, Catherine-pl. S.W.1. Quantity surveyor: Ernest R. Babbs. *Higgs & Hill, Ltd.

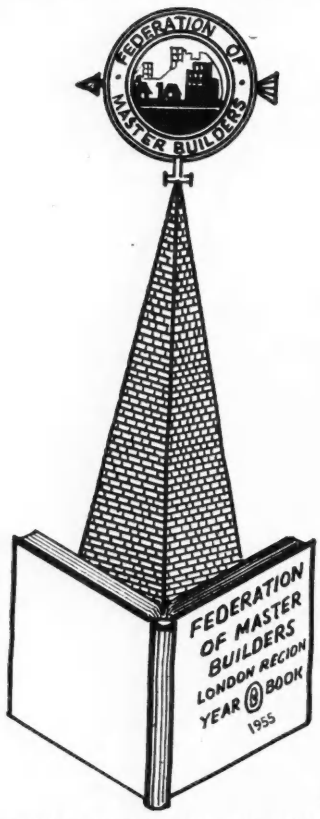
Sheffield.—Houses at Gleadless Valley estate for TC: (56) *J. W. Sivil, Ltd., Chesterfield, £80,989; (92) *M. J. Gleeson (Contractors), Ltd., Sheffield, £129,843.

Wallsend.—Erection of old people's home at Wallsend for Northumberland CC. Architects, Mauchlen, Weightman and Elphick, 12, Saville-row, Newcastle-on-Tyne: *Crawford and Huddart, Wideopen, Northumberland, £33,577.

Whitehaven.—Erection of church at Mirehouse for the Diocesan Board of Finance: *John Laing & Sons, Dalston-rd., Carlisle.

Wigan.—Erection of factory at Kitt Green, near Wigan, Lancs, for H. J. Heinz Co., Ltd. Architects, J. Douglass Mathews & Partners, 3, Ebury-st., SW1. Quantity surveyors, A. Boxall & Partners. Structural engineer, A. C. Aston. Civil engineers, John Taylor & Sons. Chartered surveyors, Dunlop Heywood & Co. Mechanical and electrical engineers, Buckle & Partners. Mining engineers, A. Leech, Son & Dean: *A. Monk & Co., Ltd., Warrington, Lancs.

Workington.—Erection of store, Murray-rd., for Workington Beehive Industrial Co-op. Society. Architects, Oldfield, Simpson and Saul, National Provincial Bank-chbrs., Workington: *Graham and Lawson, Ltd., James-st., Workington.



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